ELEMENTARY PSYCHOLOGY

BY

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TO

T. V. D.

MY LIFELONG COMPANION, FRIEND AND PHILOSOPHER,
WITH FEELINGS OF
DEVOTION, ESTEEM AND GRATITUDE.

PREFACE

THIS elementary text-book is especially designed to meet the requirements of the Intermediate students of the Punjab University. It covers the whole prescribed syllabus, dealing with the fundamental topics in their essential aspects, and avoiding all controversial questions not required at this stage. Every attempt has been made to simplify the presentation of the subject, with the aid of suitable and familiar illustrations.

The little book may also prove of some use to the layman who desires to acquire a general knowledge of psychology, which, in its practical applications, is becoming the most useful study to-day.

I have tried to utilise my knowledge of the needs and the standpoints of Indian students, which I gained during my fifteen years' teaching at the premier college of Bengal, the Presidency College, Calcutta; and feel confident that the book contains just what our junior students require.

I am indebted to a number of writers, whom I have quoted in the foot-notes.

PRABHU DUTT SHASTRI.

3, MULTAN ROAD,
LAHORE.
January, 1928.

CONTENTS

CHAPTER I

DEFINITION, DATA, AND METHOD

PAGE

Definition and subject-matter—Standpoint of psychology—Data of psychology—Mental processes—Mind—Consciousness and behaviour—Consciousness and mind—Mind and Soul—Problem of psychology—Methods of psychology—Branches of psychology 1

CHAPTER II

MIND AND BODY

Relation of mind and body—Consciousness and the brain—The nervous system 15

CHAPTER III

ANALYSIS OF MENTAL PHENOMENA

Modes of consciousness—Thought and action—General characteristics of consciousness—Unity of consciousness—Consciousness in constant change—Consciousness a continuity—Consciousness selective—Degrees of consciousness—Subconscious and unconscious processes—Movement and behaviour—Types of behaviour 19

CHAPTER IV

SENSATION

Nature of sensation—Pure sensation impossible—Attributes of sensation—Classification of sensations—Kinæsthetic sensations—Weber's "Law" 30

CHAPTER V

FEELING

PAGE

Nature of feeling—Feeling and sensation—Feeling and affection —Attributes of feeling—Higher and lower feelings—Rôle of feeling in mental life 39

CHAPTER VI

ATTENTION

Consciousness and attention—Conditions of attention—Kinds of attention—Scope or span of attention—Duration of attention—Inattention 45

CHAPTER VII

PERCEPTION

Sensation and perception—Analysis of perception—Apperception —Forms of perception—Perception of space—Perception of time—Illusion—Hallucination 52

CHAPTER VIII

MEMORY AND IMAGINATION

Definition of memory—Analysis of memory—Retention—Recall or reproduction—Recognition—Laws of association—Law of contiguity the primary law—Physiological basis of association—Kinds of memory—Memory types—Good and bad memory—Forgetfulness—Imagination—Imagination and memory—Imagination not creative but constructive—Percept, image and idea 64

CHAPTER IX

INSTINCT

Nature of instinct—Instinct and reflex action—Instinct and habit—Instinct and intelligence—Human instincts—Blindness of instinct 82

CHAPTER X

EMOTION

PAGE

Nature of emotion—Emotion distinguished from instinct—Classification of emotions—Mood and passion—Temperament—Sentiment—Types of sentiment—Function of emotions 88

CHAPTER XI

THOUGHT AND LANGUAGE

Thought and language as mental activities—Man and brute—Discrimination—Comparison—Meaning—Conception and language—Judgment—Reasoning—Development of language 100

CHAPTER XII

VOLITION

Volition analysed—Classification of movements—Development of movements—Ideo-motor action—Habit in relation to thought and action—Formation of habit—Deliberation—Choice—Attention and volition—Reaction time—Habit and character 117

CHAPTER XIII

THE SELF AND ITS DISTURBANCES

Unity of consciousness—Idea of the self—Types of personality—Disturbances of the self—Multiple personality—Hypnosis—Dreams—Sleep 132

APPENDIX I

THE MIND-BODY RELATION 146

APPENDIX II

THE JAMES-LANGE THEORY OF EMOTION . 149

APPENDIX III

THEORIES OF INSTINCT 153

INDEX 155

ELEMENTARY PSYCHOLOGY

CHAPTER I

DEFINITION, DATA, AND METHOD

1. Definition and Subject-matter.

Psychology is the Science of Mind—A Study of Human Nature—Mind—Behaviour.]—Psychology is the science of mind. But as it is difficult to give a simple definition of "mind," we might define psychology as a study of human nature. Human nature reveals itself in two aspects: the inner aspect, which is called mind or consciousness, and the outer aspect, called action or behaviour. Suppose a book is placed before me. I at once recognise it as a "book," look at it with some interest and curiosity as to its subject-matter and author, feel pleased with its excellent binding, turn over a few pages at random, and then put it aside. This "I" or conscious self within me, which knows it to be a book, feels pleased with it, and turning over the pages here and there puts it aside, is the mind. It is the invisible centre of all my inner life. What is visible, *e.g.* the movement of my fingers, the turning over of the pages, the smile of satisfaction, the putting it aside, etc., are the manifold expressions of the inner life or the mind, and form my behaviour. The mind is not a little man seated somewhere within the body, but it is

simply the unity of the whole of my inner life of consciousness, of knowing, feeling, and willing. Owing to a mysterious but intimate relation between the mind and the body, it so happens that the mind expresses itself through our action or behaviour. Thus the mind and its behaviour together constitute our human nature. Even the lower animals have a mind—though far less developed than ours—which is studied through their behaviour alone. Hence, if we emphasise the former aspect, we define psychology as the science of mind; and if we emphasise the latter aspect, we define it as the science of behaviour. The distinction rests on the method of study. The present-day tendency is towards emphasising the objective or behaviouristic aspect of human nature, and on that basis the rapid development of experimental psychology is proceeding.

Psychology defined.]—To make an adequate study of the mind, psychology must combine the treatment of the facts of consciousness and the facts of behaviour. For instance, we can at once distinguish the insane from the sane by the character of the former's behaviour, which strikes us as queer and abnormal. Then, again, we know that a dead man has no consciousness, because of the absence of his behaviour. Thus, the mind is mirrored in action or behaviour. Hence psychology, being a study of human nature, may be defined as the science of mind or as the science of human behaviour.

2. Standpoint of Psychology.

Its Peculiar Standpoint—Subjective and Individualistic.]—Psychology has no special subject-matter, since all objects of experience can become objects of consciousness. Its peculiarity lies in its standpoint, the angle from which it looks at facts. Physics, biology, botany, etc., deal with objects as such, without any reference to the mind knowing them. But psychology deals with objects only in their relation to the mind, that is, only in so far as they are

experienced by a person. Hence, we may characterise the standpoint of psychology as *subjective*.

At the same time, when we study the mind through its behaviour, we must not forget that psychology adopts the *individualistic* standpoint, and treats of individual or personal mind. Mental states must belong to some individual's life-history, which serves as their background.

3. Data of Psychology.

Wide Scope—Mind, World, and their Interaction Assumed.]—Psychology has a very wide scope. It includes everything that can be called a mental state, or, viewed from without, every kind of behaviour. In order that knowledge may be possible, it is necessary that there should be a mind and also that there should be a world. It is their mutual relation, the interaction of the mind and its environments that creates knowledge. Hence, psychology assumes the existence of the mind, the world, and their mutual influence. It has no interest in the mind abstracted from its contact with the world of objects, or in the world other than that known to the mind.

Objects as Data—Meaning of "Object" in Psychology.]—In what sense are *objects* its data? The answer is that psychology views everything in relation to the mind, and so it cannot recognise objects apart from their existence as they appear to us. What they are in themselves, we do not know. We are only concerned with objects as they appear to us, *i.e.* the way in which they affect our mind. In psychology, therefore, the term "object" means "whatever any individual means or refers to." It is not even necessary that objects in this sense must have a real existence in nature as well. We may, for instance, dream of a giant riding a green horse. Neither the giant nor the green horse exists in reality, yet each is an object for the psychologist. Anything that can become an object of our thought is an object in this sense, and forms an important part of the data of psychology.

4. Mental Processes.

Mental Processes—Thinking, Feeling, and Willing—Their Complex Unity.]—Mental processes or modes of consciousness are the various ways in which the mind is related to the objects it apprehends. For instance, when I desire to eat an apple, the very act of desiring brings my mind in contact with the idea of eating an apple. Hence desiring is a mental process. As we shall point out later on, there are three ultimate modes in which the mind and the world come together, viz. thinking, feeling, and willing. Every kind of mental activity can be placed under one or more of these categories. They exist in a complex unity, and it is only by abstraction that we speak of them as distinct.

Mental States belong to Individuals.]—Mental states do not exist apart from each other. They belong to some conscious individual, who recognises them as his own, since they are parts of his life-history. They possess a peculiar unity of their own. My thoughts and feelings cohere in me; they are mine; they have no meaning in the context of your thoughts and feelings. There would be no unity and coherence in them, if they were not owned by a person.

This Unity is Unique.]—This unity of mental states is unlike anything else. It does not exist in space. The "mind within" does not mean that it is located in space. A material thing is composed of parts, but the mind is not "composed" of mental states; it comprises their complex totality in a way unique by itself.

5. Consciousness and Behaviour.

We have to study facts of consciousness and facts of behaviour. This combined study forms the subject-matter of psychology. These two are closely related, although on their clear distinction are based various systems

and theories. A description of consciousness and that of behaviour must supplement each other to constitute a satisfactory science of psychology.

Consciousness.]—Consciousness is the immediate awareness of any object. The object may exist in nature or may simply be an idea within me. Thus I can be conscious of a book, a table, a chair, my headache, my ignorance, my faults, etc. When I think of the European War, it becomes an object for my consciousness, and although it took place several years ago, to me it is an object of which I am immediately aware. In this sense of being presented to my consciousness, "the whole choir of heaven and furniture of earth" may form the subject-matter of psychology.

Behaviour—Relation of Consciousness and Behaviour.]—When we pass by the showroom of a draper, we see a number of new designs in cloth, ready-made clothes, etc., exhibited in the window. We look at them, examine their comparative merits, discuss their price and usefulness, and either make up our mind to order a suit of clothes at once or pass along further. Some one shouts our name, and we raise our head and look out. Seated with friends we pour out tea, mix it with sugar and milk, stir it with a spoon, and sip it. All these activities are our *behaviour*. If we are awakened at midnight by some strange sounds in the adjoining room, we are overtaken with fear, and in anticipation of some evil happening, our breath is choked, our body shivers, our general bodily movements become somewhat confused, and our heart beats quickly. All these movements are included in behaviour no less than the simple movements of speaking, walking, swimming, etc. Psychology, as a science of human behaviour, has to take account of all kinds of behaviour except the purely physiological movements, such as the mechanism of respiration, circulation of the blood, secretion of bile, etc., which have a very indirect and remote relation to consciousness. Behaviour is the outer counterpart of consciousness. Man's inner nature is revealed in his actions. Conscious-

ness is to be studied as the immediate condition of behaviour, and behaviour as the expression of consciousness. Consciousness means the immediate awareness of anything, and behaviour implies our organic activity, *i.e.* the movements we perform in response to stimulation.

6. Consciousness and Mind.

Conscious State and Mental State—Mind includes the Subconscious and the Unconscious—Mind implies more than Consciousness—Consciousness always at the Present Moment.]—These two words are very often used in the same sense. But it is now usual to distinguish them. Anything of which we are immediately aware is a state of consciousness, while a mental state includes subconscious and unconscious states as well. It is now held that even in deep sleep the mind functions in a mysterious way. Much of our mental life is covered by the subconscious and the unconscious. A conscious state or a state of consciousness must always exist in the present. Anything in the past or in the future is not a state of consciousness. In trying to recall a name now forgotten, I must not imagine that it lies buried somewhere in my consciousness, and that I have to pull it out of the past. An idea once forgotten is gone out of my consciousness, leaving behind nothing but a disposition or tendency which is due to certain modifications in my nervous system of which we shall speak later.

Consciousness as "Mind—now"—Mind Active during Sleep—In Sleep, Consciousness Absent but Mind Present.]—Titchner distinguishes mind and consciousness by saying that mind stands for the sum-total of mental processes occurring in the lifetime of an individual, while consciousness is restricted to the sum-total of mental processes occurring *now*, at any given "present" time. He adds that although the subject-matter of psychology is mind, "the direct object of psychological study is always a

consciousness." * This makes consciousness a section of mind. Thus:

Consciousness=Mind *now*.

Mind is more than consciousness. For instance, when we dream, we are not conscious of the outer world, but create a dream-world of our own. We are also not conscious of the fact that we are *dreaming*. But our mind is at work even there, otherwise the imagery of our dream could not be explained. Then, again, when I wake up in the morning after enjoying a thoroughly sound sleep, undisturbed by any dream, I experience a sense of freshness and buoyancy, and remark to my friend, "I had very good sleep." Now, if there were no mind to witness the sound sleep, how could I speak with any justification of having had a good sleep? Thus, although consciousness was absent, the mind was present. Modern psychology is becoming more interested gradually in the phenomena of the subconscious and the unconscious, which occupy a much more extensive territory than the conscious.

7. Mind and Soul.

Psychology as Philosophy.]—Psychology is claimed as an exclusive possession both by philosophy and science. Till about a hundred years ago psychology was treated more as a part of philosophy than of science, and it undertook to study the life of the soul as manifested in mental phenomena. The soul was supposed to be "a little man" residing somewhere in the heart and directing all mental operations. Ancient Indian psychology also speaks of the soul as seated in the cavity of the heart and having the size of the thumb.

And as Science—Scientific Psychology banishes "soul" —Mind—Subject-Object Relation.]—But even if such a

* Titchner, *Text-Book of Psychology*, Macmillan, New York, 1921, p. 19.

mysterious little man did exist, no scientific knowledge of it is possible, and the present-day psychology is more in the spirit of science than of philosophy, and must therefore banish the conception of "soul" from its limited field. As science, psychology is a study of fact: it regards mental life as ultimate and rejects the hypothesis of a soul (*Psychologie ohne Seele*—Lange). Mental life is constituted by the subject-object relation, without which experience is not possible. Thus the name Mind is given to the subject of knowledge, the knower, or the empirical self, while a series of thoughts and feelings or mental phenomena are the object of knowledge. It is this subject-object relation that is known as "the fact of presentation" (Ward). All attempts to ignore this relation by striking out either the subject or the object are bound to be futile and self-contradictory. In other words, Mind cannot mean either the mere subject of knowledge cut off from all thoughts and feelings, or the mere series of mental phenomena without a subject for whom they are phenomena. The former position was that of the old rational psychology which identified the mind with the soul, and therefore mental life with the soul-life. That position has been entirely given up at present, and no attempt is made by psychology to invade the territory of metaphysics. The latter position is upheld by psychologists like James, who take thoughts themselves as thinkers, being compelled all the time to recognise the existence of the subject-object relation, or the "I-Me relation." No experience is possible without such relation.

Self—Mind.]—But although a "transcendent soul" is beyond the psychologist's ken, *i.e.* although psychology can exist without the soul hypothesis, there could be no psychology without a "self." We therefore do not agree with James in taking thoughts themselves as thinkers, but believe in a self distinct from the series of thoughts and feelings for whom they are mental phenomena. Such subject of knowledge *plus* the series constituted by the

objects of knowledge or mental phenomena is called Mind in psychology.

8. Problem of Psychology.

Psychology a Scientific Study of Human Nature—Its Problem is to Analyse Mental Life into Elements; to Discover the Mutual Relation of Elements; to Inquire into the Mutual Response of Organism and its Environment; and to Explain Mental Life in Relation to the Nervous System.]—The problem of psychology is to make a scientific study of human nature. The psychologist has to dissect our mental life into its elements, to find out the most elementary units of our thinking activity. He has also to discover the mutual relation of such elements, and the laws which govern their interconnexion. Lastly, he has to explain how our mental processes occur, how we think, feel, and will in so many particular ways, how our organism responds to the environment. Taking the inter-relation of mind and body as a settled and undisputed fact of our experience, he has to explain mental phenomena in reference to their corresponding bodily movements, more especially those of the nervous system. Thus, he has to analyse the complicated mental life into its simplest components; then verify the combination of elements into complex states by experiment and observation, seeing how far they are characterised by uniformity; and, lastly, to explain, as far as possible, the occurrences of mental life in relation to the nervous system.*

Wundt's Statement of the Problem.]—This is well expressed by Wundt: "The whole task of psychology can therefore be summed up in these two problems: (1) What are the elements of consciousness? (2) What combination do these elements undergo and what laws govern these combinations?" †

* Titchner, *op. cit.* pp. 36 f.

† Wundt, *Introduction to Psychology*, London, 1912, p. 44. "Elements" mean the ultimate parts of the content of consciousness, those that cannot be further disintegrated.

10. Methods of Psychology.

Human Nature can be Studied in Two Ways: by Subjective and Objective Observation.]—We can study human mind in two ways, either by observing our own conscious states or by observing others' acts. The former is subjective observation, self-observation, or *Introspection;* the latter is objective observation, known in psychology as *Observation.*

(1) *Observation.*—Observation as a psychological method follows the ordinary rules employed in common with all the other sciences.* It is always selective. We observe what we are interested in. Observation also depends on the previous state of our knowledge, and is generally made in the light of some hypothesis. We try to isolate as far as possible the fact we observe and eliminate the irrelevant, and repeat our observations to lessen the risk of error. In observation we look outward and turn our attention to the acts of other persons. This is after all not so difficult as to turn the mind inward on its own states.

(2) *Introspection—Its Difficulties: (a) Mental States always Changing; (b) Difficult to Act as Subject and Object at once; (c) Introspection too Subjective and Uncertain; (d) Confined to Adults only.*]—The difficulty appears to be so real as to lead to the question whether introspection or self-observation is at all possible. It is said that when we observe our own mental state, we find that it disappears, and even if it does not disappear, it is distinctly changed. When, for instance, I study the state of pleasure or pain, I find that it ceases to be the state I actually wanted to study. If I begin to observe my own anger, it disappears. It is very difficult for the mind to study itself. To act as subject as well as object at one and the same time is very difficult. For instance, when I see a spider on the wall, I

* For Rules of Observation, see the author's *Elementary Textbook of Inductive Logic,* Macmillan, p. 104.

can easily observe the spider, but find it very difficult to study at the same time the process itself by which my mind perceives or becomes aware of the spider on the wall. Again, introspection being confined to the individual is too subjective to yield any verified and correct knowledge. I can only study my own mind and not yours. Hence, I am unable to compare the working of my mind with yours in order to be sure if all men think and feel alike. I have no means of knowing if what you mean by "red" is exactly the same as I understand by it. Lastly, introspection is confined to adults capable of thinking systematically. It has no application to children, animals, and savages, whose behaviour can only be studied by observation.

How these Difficulties can be Overcome: by Memory; by Repetition; by Mutual Collaboration.]—But the chief drawbacks of introspection can be removed, if, for instance, we observe our mental states in memory. Let the evanescent mental state pass away: we can examine it a little later by reviving it in memory. Such observation in memory is usually accurate. Besides, we must introspect repeatedly, and base our inferences on the accumulated results, thereby ensuring a greater accuracy. Lastly, we ought to work in collaboration with others who are also engaged in introspection, and co-ordinate the results together. In this way the chances of error will be lessened.

Rôle of Experiment as Method—Verification—Systematisation—Accuracy by Scientific Instruments—Quantitative Study.]—There is another method called the method of *Experiment*, which is being vigorously employed at the present day in the investigation of psychological problems. If the results of introspection and observation are subjected to a further verification by experiment, as far as possible, their value is greatly enhanced by their systematisation. Whatever psychological information is gained by introspection and observation must necessarily be reduced to a system and coherence in order to be of any scientific value. Thus we can develop both introspection and

observation in this direction of systematic arrangement by carrying them on under experimental conditions with the help of certain scientific instruments calculated to yield accurate results. It is possible, by experiment, to study the facts of consciousness and behaviour—more especially the latter—in their quantitative aspects as well.

Wundt, the Pioneer of Experimental Psychology.]—Experimental work in psychology is being enthusiastically done these days—ever since the foundation by Wundt of his laboratory of experimental psychology at Leipzig. We have now developed the methods of mental tests, psycho-analysis, animal behaviour, etc.

Best Method: Combination of Introspection, Observation, and Experiment.]—The best method of psychology is, therefore, a combination of Introspection, Observation and Experiment. Each must be looked upon as auxiliary to the other. Facts of consciousness to be studied mainly by introspection, facts of behaviour by observation, and both these to be subjected to experimental verification—that will ensure perfectly sound results in psychological research.

11. Branches of Psychology.

General Fields of Psychology.—Descriptive or Static Psychology.—Genetic or Dynamic Psychology.]—Psychology may be studied either as descriptive or as genetic.* Descriptive psychology is a study of consciousness and behaviour as actually existing in any species, without any attempt to determine their origin and growth. For instance, we may study the fact of attention in adults, without considering its growth from the early child-mind. We may study thinking, speaking, laughing, etc., as revealed in man without any attempt to find out how such behaviour developed. Genetic psychology, on the other hand, is a

* Descriptive psychology is also known as Static, and Genetic psychology as Dynamic.

study of mental life as it gradually developed. A child of a year or so is helpless, cannot walk securely, cannot sit at the table with us, but must be fed by us, cannot bathe and dress. How from this state of helplessness he develops into an adult capable of performing movements common to all civilised people is a study for genetic psychology. It inquires into the genesis of our mind as evidenced in our behaviour. We know that the beginning of conscious life goes back to even before birth.

Introspective Psychology—Behaviouristic Psychology.]—There is also another classification of psychology, based more exclusively on the *method of study*. Thus we have consciousness psychology and behaviour psychology. The former is also called introspective psychology, as it employs the method of self-observation (introspection) and limits itself to the study of consciousness as such. It studies human nature from the inside. The latter studies human nature exclusively from the outside, employing only the behaviour method. It limits itself to the study of behaviour, and sometimes goes so far as to deny the very existence of consciousness.

Special Fields : Child, Animal, Abnormal, Physiological, Experimental, Social.]—At present many special fields of psychology, besides the normal human adult psychology with which we are concerned, have sprung up. We have child psychology, which studies the child-mind genetically. There is also animal psychology, which is a genetic study of animal intelligence and behaviour, especially as compared with human. Another principal branch is abnormal psychology, which studies diseased or imperfectly developed minds (such as those of Helen Keller and Laura Bridgman, who were born deaf-mute-blind), and mental derangement (as in hypnotism or hallucination). Mention is also made of physiological psychology, which treats of the nervous system in particular with reference to its relation to conscious life. A new branch, called experimental psychology, is making vigorous progress at present. It

studies the mind through behaviour in the laboratory under artificially arranged conditions or experiments. There is still another section, social psychology, which studies social consciousness, *i.e.* the group-mind or the mind of individuals in the community (*e.g.* in language, law, custom, myth, and religion).

CHAPTER II

MIND AND BODY

1. Relation of Mind and Body.

Relation of Mind and Body.]—The mind responds to the outside world through the body. There is no such thing as a disembodied mind for psychology. Mind and body are intimately related, though the nature of their relation remains a mystery yet.

Mental States as Motor—Mind and Body influence each other.]—"All mental states," says James, "are followed by bodily activity of some sort . . . *all* states of mind, even mere thoughts and feelings, are *motor* in their consequences." * Common sense supports the supposition that mind influences body and body influences mind. For instance, when we are happy, we smile; when we are sorry, we cry; when we are amused by the stunts of Charlie Chaplin, we laugh; when we are frightened by the sight of a bear let loose, we run away with all our might; when we have headache or cannot digest our food, we feel gloomy; when we are ailing for some time, we are irritable; and on being chloroformed, or on receiving a blow on the head, we lose consciousness for a time. It is obvious, therefore, that mind and body are inter-related.†

2. Consciousness and the Brain.

Consciousness directly related to Brain—Aristotle's notion of Brain.]—It is, however, not the whole body with which the mind is so intimately connected. Consciousness

* James, *op. cit.* p. 5.

† For further details on the Mind-Body relation, *vide* Appendix I.

is directly dependent upon a part of the body called the *brain*, which is the principal part of the nervous system. Behaviour is largely explained by the action of the nervous system, which cannot be known directly but only from its effects. It was such ignorance that led Aristotle to look upon the brain as "merely a gland for the secretion of tears, and that its only function in thinking was to cool the animal spirits that originated in the heart and circulated through the brain." *

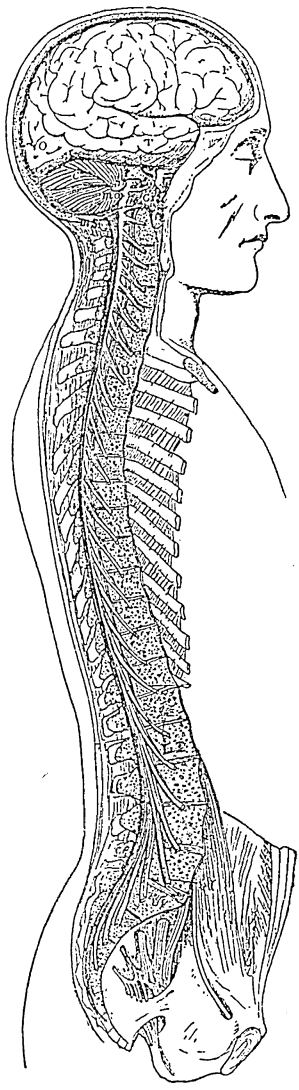
Facts proving Relation of Consciousness and Brain.]—That consciousness is related to the nervous system is proved, in the first place, by the fact that with the greater complexity of the nervous system goes a greater complexity of behaviour. The ant has practically no nervous system. In man, as well as in the higher animals, behaviour is very complicated, because the nervous system is very much more developed. Man stands at the top in this respect. Secondly, the relation is proved still more strikingly in pathological cases. On probing into the brain-tissue of an insane person, you will discover some alterations not to be found in the normal brain. If a part of your brain is injured, some muscles are bound to be paralysed, or some one of your senses may be lost, or you may lose your memory. A large number of cases of the loss of memory resulting from shell-shock during the Great European War have actually been reported.

This Relation as Basis of Physiological Psychology.]—The mutual and intimate relation between mental action and brain action is the very basis on which the modern physiological psychology is being built.

3. The Nervous System.

Why the Nervous System should be Studied.]—Why should we take up the study of the nervous system in a text-book of psychology? We are, of course, not called upon to make any detailed study of the subject here, but a very

* Pillsbury, *op. cit.* p. 17.



The Cerebro-Spinal Cavity and its Contents.

From Furneaux's "Human Physiology")

brief and elementary knowledge of the nervous system seems desirable and even necessary for the following reasons *: (1) Consciousness, as we have already said, is intimately bound up with bodily activity, (2) facts of consciousness and facts of behaviour are, to a great extent, explained by the nervous system, and (3) behaviour is controlled by the nervous system.†

Cerebro-spinal and Sympathetic System.]—The nervous system is twofold: the cerebro-spinal system and the autonomic (or sympathetic) system. The latter is connected with functions of purely organic life, and has no direct relation with the mind.

The cerebro-spinal system consists of the brain, the spinal cord, and the peripheral connexions.

Brain.]—The brain is enclosed in the skull and consists of the cerebrum, the cerebellum, and the medulla. These are shown in the figure.

Cerebrum—Cerebellum—Medulla—Spinal Cord.]—The *cerebrum* is the brain proper, consists of two hemispheres separated by a fissure, and is the seat of knowing, feeling, and willing. The *cerebellum*, or little brain, is situated below the hinder part of the cerebrum, and functions the co-ordination of all muscular movements. The *medulla* is of the shape of a pyramid, and is the bulb of the spinal cord. It acts as a conductor between the cord and the two brains. The *spinal cord* is a column of nervous tissue running through the vertebral column. It is the centre of reflex action, as it converts sensory impulses directly into motor impulses.

Connecting Organs are Sensory and Motor Nerves.]—The organs which connect the brain with the peripheral sensory and motor organs are bundles of nerves, called *afferent* (or "sensory," incoming nerves) and *efferent* (or "motor," outgoing nerves).

* Cf. Hunter, *General Psychology*, Chicago, 1919, p. 147.

† This is done by the co-ordination of *receptors* (sense-organs) and *effectors* (muscles and glands).

CHAPTER III

ANALYSIS OF MENTAL PHENOMENA

1. Modes of Consciousness.

Three Ultimate Modes of Subject-Object Relation: Knowing, Feeling, and Willing.]—It is usual to speak of three ultimate modes in which the mind and the world come together: knowing, feeling, and willing—otherwise called cognition, affection, and conation. For instance, suppose I see a boy, while crossing the road, run over by a motor-car. This is knowing. I go near (conation or acting or willing), examine the injuries (knowing), feel sorry for the poor lad as well as for his parents (feeling), ring up for an ambulance, and on its arrival help the boy into it (acting). Take another example. News has arrived that my son stands first in a competitive test at a British university (knowing); I am very happy to have this news (feeling); and I communicate to my friends and send a cable congratulating the young man (willing). Thus, knowing (cognition), feeling (affection), and willing (conation) are the three primary and ultimate modes of mental response to stimulation, of the relation between the mind and the outer world. Knowing is a state in which we actively take notice of anything. Feeling is the state of pleasantness or unpleasantness created by an object. The same object may be agreeable now, and disagreeable again. Much depends on our mood as well as the frequency of repetition. Willing is the state tending to lead to action; wanting an object to change or to continue as it is. It is an expectant attitude of the mind.

Thus, perception, memory, imagination, reasoning, etc., are forms of cognition; love, anger, sorrow, happiness, etc., are forms of feeling; and attention, impulse, etc., are forms of conation.

Mind is One and has no Parts—Types of Minds.]—Mind should not be imagined to have three different parts. That is an utterly wrong notion. Mind is one, and these are the three phases or aspects or modes in which it responds to stimulation, or manifests its activity. They are never completely balanced, but exist more or less in every form of neutral activity. That which predominates gives its name to the type of mind. Thus, in women's minds the feeling aspect predominates, in men's minds it is usually conation. Some men may behave as cold and disinterested persons busy in their own thoughts, as many philosophers are. They represent the predomination of cognition. Others, again, are sentimental like some of our great poets. They represent an exuberance of the feeling aspect. Some, again, may be men of action, like Sivaji, Wellington, Napoleon, etc. They represent the supremacy of the conative aspect.

2. Thought and Action.

But Mind is better viewed under two Aspects: Thought and Action, both Mutually Related.]—But the triplicate of knowing, feeling, and willing, though a useful conception for the beginner, is being gradually discarded in favour of the two aspects of consciousness and behaviour. Thus we now speak of (1) the psychology of thought, which includes knowledge, perception, memory, imagination, reasoning, etc.; and (2) the psychology of action, including instinct, emotion, will, etc. Both are mutually related, and it is not implied that either can exist without the other. We prefer this twofold distinction of thought and action, as it is in harmony with the point of view adopted in this book, viz. that psychology is a scientific study of consciousness and behaviour.

Affection a Characteristic of all Mental States—"Feeling-tone" of Sensations.]—We take affection to be an essential characteristic of all conscious states. Every sensation is either pleasant or unpleasant. Our total consciousness at each moment of our life has a "feeling-tone," which is either pleasure of pain. Thus we place feeling along with the class cognition.

3. General Characteristics of Consciousness.

Consciousness cannot be Defined—Wundt's Description.]—We have spoken of consciousness as our immediate awareness of anything. We cannot define consciousness, because it is one of those ultimate facts beyond which it is impossible to go in order to find a higher genus. Such complex facts can only be described and analysed. Wundt speaks of consciousness as consisting of the sum-total of facts of which we are conscious. As we are now about to investigate the content of consciousness, we shall first make a few general observations as to the nature of consciousness.

Four Characters of Consciousness.—There are four principal characters of consciousness :

1. That consciousness is a unity.
2. That consciousness is in constant change.
3. That consciousness is a continuity.
4. That consciousness is selective, hence there are degrees of consciousness.

4. Unity of Consciousness.

Consciousness is Personal—Hence it is a Unity.]—Psychology does not recognise the existence of a disembodied soul. Hence, it maintains that consciousness is always personal and individual. Every mental state belongs to and centres round a personal consciousness. As Ward says, "Everything mental is referred to a self." My thoughts and feelings are mine and not yours. They

centre round my individuality, and taken out of that context mean nothing. My thoughts constitute a universe of their own: they are related to one another in so far as they belong to me. There would be no unity and coherence in them, if I did not own them.

5. Consciousness in Constant Change.

Consciousness Ever-changing—It is a Stream—No Exact Repetition Possible.]—Consciousness is an eternal flux. Like a stream, it is always running. I may handle the same book daily, but my thought of the book—*i.e.* the book as an idea in my mind—will never be the very same thought. For all purposes it may appear to be the same idea, but in reality you cannot think the same thing twice in exactly the same manner. You cannot jump in the river twice. You play on the same piano every evening; the piano may be the same, but the mental response can never be duplicated. Each thought involves some movement or change in the brain. The repetition of the same thought would mean that it could occur in an unmodified brain, which is impossible. Each time we notice the book we see it in a somewhat fresh manner and in slightly different relations. If I visit the House of Commons every day for a month, I may see the same building every time, yet each time I view it afresh and in different relations. James observes: "A permanently existing 'idea' which makes its appearance before the footlights of consciousness at periodical intervals is as mythological an entity as the Jack of Spades." *

6. Consciousness a Continuity.

Continuity in Change; otherwise Recognition Impossible.]—Although consciousness is in constant change, yet it keeps up its continuity. In fact, if consciousness belongs to some embodied life, some individual, it must have

* James, *op. cit.* p. 157.

continuity. Without continuity, recognition would be impossible. Different mental processes may go on in the mind, but "they are not separated from one another by something which is not mind, as pieces of land may be separated by water, or musical notes by intervals of silence." As Ward says: "At any given moment we have a field of consciousness psychologically one and continuous; at the next, we have not a new field but a partial change within this field." *

No real Breaks in Consciousness.]—There are no real interruptions or time-gaps within a single mind, when consciousness may be said to have entirely disappeared. Even during sleep, there is a thread of continuity: consciousness is not completely interrupted, although the vivid and intense consciousness of the waking life disappears. Mellane rightly observes that "there is a real bond of connexion which still survives even in what we call unconsciousness." † When I wake up to-morrow morning, I shall resume my stream of thought where I leave it to-night, the interval covered by sleep is not an absolute breach of continuity.

7. Consciousness Selective.

Selective Function of Consciousness—Selection implies Control.]—There is never an evenly uniform distribution of consciousness in any field. If we look at a picture, it is impossible to keep on looking at the same point without letting our mind shift over the various aspects of the picture. The picture itself develops in relation to our thought: otherwise it will amount to seeing the picture with "a vacant mind," which is impossible. The monotonous sound of railway coaches is broken up into different rhythms. The rushing waters of the Niagara Falls produce a monotonous sound that is arranged into rhythmic strokes

* Ward, article "Psychology" (*Encyclopædia Britannica*).
† Mellone, *op. cit.* p. 35.

by our mind in the course of our attention. While speaking or reading we cannot help emphasising certain words. This selective function of consciousness will be discussed under "Attention" in a later chapter. Here we may only bear in mind the general fact that "consciousness is always interested more in one part of its object than in another, and welcomes and rejects, or chooses, all the while it thinks" (James). When there is a noise in the street, you can still go on reading an interesting story. Here our consciousness has selected the story from a vast multitude of relations. Selection implies control. Hence, we are not entirely at the mercy of the outer world, but always exercise our selective activity within limits and thus determine what we shall see, what we shall hear, or what we shall think. When I am deeply engrossed in my thoughts, you might give several knocks at the door and feel irritated on my not hearing them. On the other hand, when we are expecting a friend, the faintest sound of footsteps will be heard, and a slight knock at the door will be answered at once.

It has a "Focus" and a "Fringe" which keep on shifting, and together form the "Field of Consciousness."]— Thus we may speak of consciousness as having a "focus" and a "margin." The object in the focus becomes clear while that in the margin remains indistinct and obscure. Only certain features of an object are prominent, and all the other details are vague, being in the "margin" of consciousness. And as consciousness is in perpetual fluctuation, it is evident that its "focus" and "margin" keep on shifting. If a score of objects are lying on the table before me, my gaze will be fixed now on one, and now on the other; all the remaining objects will lie on the "margin" of consciousness. The "focus" and "margin" of consciousness together make up the "field of consciousness."

8. Degrees of Consciousness.

Consciousness has Degrees—Gradually passes into Unconsciousness.]—Hence it follows that there are degrees in consciousness. The object on which I fix my gaze—*i.e.* to which I attend—has certainly a greater degree of consciousness than those of whose existence roundabout I have only a vague awareness. What happens when we retire at night and fall asleep ? Our consciousness becomes less and less in degree. It is impossible for any one to fall asleep in the twinkling of the eye. We have a gradual decline of consciousness. It is impossible to say definitely where consciousness ceases and unconsciousness begins. They shade off into each other. Consciousness does not leave off anywhere abruptly, but by becoming dimmer and dimmer passes into unconsciousness. This process is experienced by a patient who is put under ether or chloroform. Using the same metaphor, we may add that the farther away we go from the focus of consciousness, the less clear will the object become. We shall treat this subject in more detail in the chapter on " Attention."

9. Subconscious and Unconscious Processes.

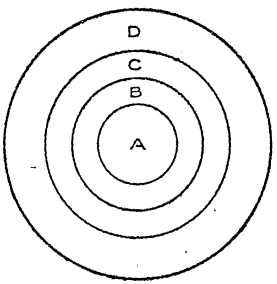
Vague Consciousness beyond the " Margin "—Subconsciousness.]—Beyond the " margin " of consciousness there is another degree of consciousness in which mental processes occur without being clearly felt by us. They are so vague as not to strike us sufficiently. We take notice of them only when they enter the " margin " of consciousness. Persons residing in a noisy part of a big town do not take notice of the noise but can concentrate their mind on their studies or other objects. The noise is there all the time ; it is not altogether incapable of being attended to by us, but as a rule fails to distract us. So, too, we can be engaged in our work without being distracted by the distant murmur of the sea. Such processes, therefore, which are not strong enough to arrest our attention but

are not entirely incapable of entering the "field of consciousness" are known as subconscious processes. These processes exist not only in sensation but in memory and imagination as well. When I recall the name of an acquaintance, I sometimes have to struggle a good deal before the name appears in my consciousness. I know the initial letter and have a faint idea of the general sound as well; yet the name does not suggest itself all at once. It is in the subconscious sphere, which is always an indefinite field.

Unconsciousness—Mind has no Pigeon-holes for Ideas —Unconscious Activity—"Awareness" in Sleep.]—But even this sphere does not exhaust our mental life. It shades off into the unconscious. All the impressions and ideas that we call our own cannot always remain in the field of consciousness. What happens, then, to an idea when we do not think of it? Does the mind contain a number of pigeon-holes or compartments in which such unwanted ideas and impressions lie hidden until they are called upon to appear before the mind? Certainly not. Ideas do not sink down into the bottom of the mind. An idea exists so long as it is thought of. But it is not entirely wiped out of existence when not before consciousness. It exists as a mere "mental disposition" in the unconscious, *i.e.* as a permanent tendency of mind. For instance, though recollecting the name of my friend is a conscious process, it depends on the mental dispositions already formed by the name. Sometimes we cannot get the name in spite of a mental struggle; but when we least think of it, it suddenly appears in consciousness. Sometimes we fail to solve a mathematical problem and leave it in disgust and retire for the night. Next morning the solution suggests itself without any conscious effort on our part. All this means that after our conscious effort stopped, another effort—the unconscious—kept going. Thus, in our mental life, the unconscious lends very useful co-operation to our conscious processes. In sleep we are

unconscious, but even there seems to persist a thread of awareness.

Graphic Illustration of "Degrees" of Consciousness.]—The degrees of consciousness may be graphically represented by the following concentric circles, whose lines, however, should not be taken to mean any real separation of the various zones or territories, as they shade into one another imperceptibly.



Here *a* represents the focus of consciousness, *b* stands for the margin of consciousness, *c* for the subconscious, and *d* for the unconscious.

10. Movement and Behaviour.

Only some Movements are Behaviour—Behaviour results from Stimulation.]—All movements are not behaviour movements. When a man is shot with a pistol and falls on the ground like a heap of flesh, it is not behaviour. His falling movement is not due to any stimulation. When your friend does not appear at the breakfast table, you suspect he might be unwell, go to his rooms, and finding him fast asleep roll him again and again in his bed. Now, this rolling movement cannot be called behaviour. As Warren aptly remarks: "The movements of a creature are not behaviour unless they are mediated by activity of the nervous arc. . . . Behaviour movements are such as are brought about by motor nerve impulses; and the latter always result from stimulation. Hence, behaviour is to be regarded not merely as bodily movement or motor activity, but as the adjusted responsive effect of stimulation." *

* Warren, *Human Psychology*, Constable, 1919, p. 94.

11. Types of Behaviour.

Behaviour Movements Classified.]—There are as many types of behaviour as the relations in which the organism stands to the outer world, and these can hardly be exhausted. The expressions of emotion are different kinds of behaviour. We see before us an object of terror attacking us. We raise our arms in defence, clench the fist, and run as fast as we can. These movements, although belonging to the same emotive expression, are different types. Thus, the classification of behaviour should be based upon a different principle.

Reflex, Instinctive, and Intelligent Behaviour.]—Accordingly we distinguish three main types of behaviour: (1) Reflex action, (2) Instinctive behaviour, and (3) Intelligent behaviour.*

Reflex action is the transformation of a sensory impulse into a motor response without the intervention of the brain. As we said above, the spinal cord is the principal instrument of reflexes, and it does not involve any cerebral activity. Reflexes exist only where the nervous system exists. Those creatures which lack a specialised nervous system have no reflexes. All one-celled animals come under this category. Consciousness plays no part in reflex action. If we take a frog and cut off its head, it will still perform reflex movements. For instance, if we push it on one side, it will regain its normal position; if we choke it, it will still croak; if we throw it in the water, it will perform the usual swimming movements. Thus reflex action is quite independent of the co-operation of the brain.

Physiological and Conscious Reflexes.]—There are two kinds of reflex action: physiological reflex and conscious reflex. In neither does consciousness "play any guiding rôle." For instance, the beating of the heart and its accompanying muscular contraction are physiological

* *Vide* Warren, *op. cit.* p. 95.

reflexes, while sneezing, swallowing, winking, etc., are conscious reflexes.

Instinct is "an inherited co-ordination of reflexes." * All activity is the arousal of instinct. Instinct represents previously formed pathways in the nervous system. It always aims at the performance, by means of a series of acts, of some non-conscious end. It is the common characteristic of a species. Thus it is an inherited form of behaviour.

Intelligence—Habit—Rational Behaviour.]—Intelligent behaviour—as in man—has two types: habit and rational behaviour. Habits are the lowest stage of intelligent behaviour. By repeated performance, an action becomes a habit, or a fixed mode of activity, and thus bears a resemblance to instinct. Rational behaviour is not so fixed, is more free and variable, and indicates a higher order of existence.

We shall have occasion to discuss these phenomena in their proper place.

* Cf. Hunter, *op. cit.* p. 178.

CHAPTER IV

SENSATION

1. Nature of Sensation.

Sensations as Simplest Mental Elements—Sensations Objective—Sensation Defined.—Five Sense Organs: their Appropriate Stimuli.]—Sensations are the most elementary components of consciousness. They are the most primary data for psychology and cannot be resolved further into any simpler mental processes. Before me are placed some fruits in a dish. How do I become aware of them? The fruits in a dish lying before me serve as a stimulus, which excites the sensory nerves, which report this stimulation in consciousness as a sensation. Similarly, when I see a dog barking at me, the dog is a physical stimulus, which excites a nerve current through the eye and produces a reaction or response in the brain. The simplest reaction thus produced is called a sensation. It is through sensation that our mind comes in contact with the external world. Sensation is objective in the sense that it points to an object which has excited it as a mental response. When I am aware of a white horse, or a bad smell, or a musical sound, and believe that my awareness is connected with the actual presence of an object, I have a sensation. Thus, sensation may be viewed as "the consciousness of any object as present to sense." * Sensations form the first raw materials which make up our mental life. They mark the meeting-point of the physiological and the psychical life. Mellone describes them as "mental

* Cf. Hunter, *op cit.* p. 231.

experiences which we have through our sensory nerves, when considered by themselves and in abstraction from other processes." These conscious processes "stand in a relation of dependency to particular nervous organs, peripheral and central" (Külpe). There are five such organs of sense, viz. the eye, the ear, the tongue, the nose, and the skin, and they are the media respectively of the sensations of sight, hearing, taste, smell, and touch. Sensations cannot result without the activity of the sense-organs and without the existence of an object present to such sense. Each sense-organ is adapted to its own appropriate stimulus. You can see with the eye and not with the ear. And as the senses would be helpless if there were no mental response, one might as well say that in reality it is the mind that sees and not the eye; it is the mind that hears and not the ear; and so on.

2. Pure Sensation Impossible.

Sensation has always a Meaning.]—When I see a white horse running in the street I have a group of sensations, among which that of whiteness is prominent. But can I have the sensation of whiteness if there were no white object (here the white horse) present before my mind? No. A sensation always refers to an object, to a physical fact, called the stimulus. In other words, a sensation *means* something beyond itself. Sensation, being a fact of consciousness, has always a *meaning*, *i.e.* it always points to an object of sense.

Pure Sensation an Impossibility, a Mere Abstraction.]—With an explicit meaning a sensation becomes a very complex mental process, called perception. By pure sensation, therefore, we mean the bare awareness which is left after we abstract from a concrete mental process all that is due to intellectual reaction on the sensation. Our previous knowledge always affects the nature of our sensations. Memory and imagination play their part implicitly, and the mind reacts on a sensation and inter-

prets it. It is therefore impossible to have a *pure sensation* in our adult life.* Perhaps the first sensation received by the child-mind could be called "pure," the subsequent sensations being affected by the previous ones and therefore remaining no longer "pure." Pure sensation is therefore a mere abstraction; in the words of Ward, it is "a psychological myth." A sensation is thus an abstract unit of our thought, while the actual and concrete unit is a perception which is the interpretation of a sensation or is a significant sensation. "We never encounter things devoid of all significance."

3. Attributes of Sensation.

Four Attributes of Sensation.]—When we speak of the attributes of sensation it does not mean that sensation is any kind of substance possessing attributes. The attributes themselves are sensation. There is no agreement as to the exact number of such attributes. We shall, however, consider four attributes, viz. quality, intensity, extensity, and duration. Külpe also mentions these four characteristics as attributes of sensation. Titchner defines a sensation as an elementary mental process which is constituted of at least four attributes, viz. quality, intensity, clearness, and duration. He includes "clearness" in the list, on the ground that it is this characteristic which distinguishes a sensation from an affection. Some add affection or feeling-tone as one of the attributes of sensation.

Quality.]—This is the very essence of sensation. All other attributes refer to it. We distinguish white from black, strong from mild, cold from hot, sweet from bitter. All this is based on quality, which distinguishes elementary mental processes from one another. The quality of sight differs from the quality of sound. You cannot mistake one for the other.

* Cf. "A literally *pure* sensation would only be possible as a first experience prior to all other experience" (Angell, *op. cit.* p. 150).

Intensity.]—It is that property of a sensation by which we can compare it with other sensations in respect of vividness or strength. A deep colour is more intense than a light shade, a loud and shrill sound is more intense than a low tone. So we may have high or low temperature, heavy or light pressure, strong or weak taste. Titchner tells us that every intensity of sensation is itself individual and characteristic.

Extensity.]—This means volume, spreadoutness or massiveness. You experience extensity around you when you plunge into a warm bath, or when you open your eyes in pitch darkness. Ward illustrates this attribute thus: "Suppose a postage stamp pasted on the back of the hand; we have in consequence a certain sensation. If another be added beside it, the new experience will not be adequately described by merely saying that we have a greater quantity of sensation, for intensity involves quantity, and increased intensity is not what is meant." Some psychologists hold that extensity is not common to *all* sensations, but applies mainly to those of cutaneous pressure and sight. But we maintain that it applies to *all* sensations. The loud report of thunder or the firing of a gun is a sound that can be contrasted with the sound of an ordinary cart passing in the street. The former has greater extensity than the latter. So, too, the sensations of taste and smell have this common quality. You get different sensations from a mouthful of pepper and a tiny amount of the same. The smell of the various flowers in a garden is different not only in intensity but also in extensity from that of a rose.

Duration (also called *Protensity*).]—Easy sensation lasts for some duration. It cannot stand outside the flow of time.

4. Classification of Sensation.

Sensations Classified.]—On the basis of the sense-organ involved, a convenient classification is made. Sensations

are either general (organic) or special. The former are not connected with any special sense-organ, but are diffused over the whole organism and are thus difficult to localise. The latter are connected with special sense-organs.

General or Organic Sensations.]—The chief general sensations are those connected with the digestive system, *e.g.* hunger, thirst, repletion, etc.; the respiratory system, *e.g.* stifling; the muscles, *e.g.* fatigue, strength, etc. These sensations do not give us knowledge of the outer world but are subjective and enter into our response of pleasure or pain. When we feel hungry, the sensation seems to be spread over the inside of our body, and it makes us uneasy. It has now been found that hunger results from the reflex action of the contraction of the stomach walls. Similarly thirst springs from the back of the mouth, but the location is not definite in the sense that we have discovered any special organ for it. The same is the case with respiration. Again, after taking a repast we feel very "fit." This is also a general sensation. But all such sensory qualities are vague.

Special Sensations.]—The special sensations are those of sight, hearing, touch, smell, and taste.

Sight.]—The organ of our sensation of sight is the eye, which has two outer coats and an inner coat, called the retina, on which the image of an object falls; a crystalline lens, which reflects the image, and two humours (aqueous and vitreous). When we see an object, ether vibrations strike the cornea, aqueous humour, crystalline lens, vitreous humour, and are fixed on the retina, from where they are communicated by the optic nerve to the brain, which interprets the impulse resulting in the sensation of vision. The eye acts like a photographer's camera. The lens shows an inverted image of an object on the retina. The convexity of the lens keeps changing in order to focus objects near and at a distance. For near objects it becomes more convex in front, and for distant objects less convex. This is done automatically by the ciliary

muscles. The ether-waves affect the retina in six different ways, which in their various combinations produce thirty or forty thousand distinguishable qualities.

The sensations of sight proper are light and colour, and of sight combined with muscularity we have movement, distance (inferred) and form.

Hearing.]—The organ of hearing is the ear, which consists of three parts: (1) the external ear formed by the pinna (for collection of vibrations in the air or sound waves) and the auditory canal through which the waves are transmitted to (2) the middle ear or the tympanum, a drum-shaped cavity, whose membrane is connected on the inside to the oval window, whence certain bones oscillate and produce vibrations in (3) the inner ear, whence through the auditory canal the nervous impulse is carried to the brain, where sensation arises. When we hear any sound, all this process is carried through in an instant. These sensations of hearing which are produced by rhythmic vibrations are called tones, and those caused by irregular waves are called noises.

Touch.]—The organ of touch is the skin, which consists of two coats, the outer known as the epidermis (which contains no blood vessels) and the inner called the dermis (which contains nerve cells as well as blood vessels). The dermis is shaped into certain folds, called the papillæ. When an object touches our skin, it compresses the papillæ, and thence vibrations are produced in the touch corpuscles, which are located on the surface of the papillæ. The nerve filaments transmit the impulse to the brain, where sensation arises. The real organ of touch is the touch corpuscle.

We have a sensation of pain when some one, for instance, pricks us with a needle. The organs of pain are the free nerve ends which are connected with the outer skin. The skin also gives us sensations of warmth and cold, and all these four—touch, pain, warmth, and cold—constitute our *cutaneous sensation.*

Smell.]—The nose is the organ of smell. When we smell a rose some very minute chemical particles are carried to the olfactory membrane in the upper cavity of the nose, thence the impulse travels to the brain through the olfactory nerve. We know very little at present about the sense of smell.

Taste.]—The organ of taste is the tongue, whose sensitiveness is due to certain papillæ, situated at its back, and are covered by "taste-bulbs," each of which contains a number of taste cells. When we taste, *e.g.* a mango, the particles come in touch with these cells, and then sensation is caused. The substance tasted must be soluble, otherwise it cannot pass into the cells. We have sweet taste, as of sugar, and bitter taste, as of quinine.

5. Kinæsthetic Sensations.

Sensations of Movement, Weight, and Resistance.]—Recent research has discovered some new sense qualities in addition to the five special senses. For instance, when we move our hands with eyes closed, or when some one else moves a finger on our back, we know the direction of the movement, and have a more or less definite idea of its amount. The sensation of movement is connected with our muscles and tendons, which may be called its organs. Besides, we have sensations of weight and resistance as well.* These three sensations, viz. movement, weight, and resistance, are known as kinæsthetic sensations.

6. Weber's Law.

Weber's Law—Relation of Sensation and Stimulus.]—A sensation is always aroused by a stimulus. If the stimulus is intense, the corresponding sensation is also intense. You know the difference between soft music and the jazz band. The latter is very much more intense, and arouses an intense sensation. In our ordinary usage,

* Cf. Pillsbury, *op. cit.* p. 101.

we distinguish intensities of sensation by such words as great, very great, a maund, a seer, an ounce, etc., which do not exactly convey our meaning. It is found by experiments that there is no direct relation between the intensity of a sensation and that of the stimulus. One hundred pounds do not give me one hundred times the sensation caused by one pound.

Weber's Discovery—Weber's Law stated.]—An attempt was made by the German physiologist Weber to determine by experiments the exact relation between the intensity of sensation and the intensity of the stimulus. This led to the formulation of what is known as Weber's Law. Suppose we lift a weight of 40 pounds, we shall find that we cannot distinguish it until one pound more is added. Now, if we take 200 pounds, the addition of one more pound will not be sufficient, but we must add 5 pounds more in order to be able to notice any addition in weight. Thus, Weber discovered that in order that an addition may be just noticed, it must be some fraction of the stimulus. This fraction varies in each sense. With lifted weights Weber discovered it to be $\frac{1}{40}$. This means that if by placing 40 lbs. upon the hand we observe no change in the pressure sensation until we add full 1 lb. more, it follows that if we took 400 lbs. we must add another 10 lbs. before the increase in intensity is noticed by us. The simplest way to state the law is : "As the stimulus increases in geometrical proportion, the sensation increases in arithmetical proportion."

Elaborated by Fechner.]—This law was further elaborated by Fechner, of Leipzig University, who stated it in the formula

$$S = c \log R$$

where S stands for intensity of sensation, R for stimulus, and c for a constant factor.

This constant factor varies in the different sense departments. In case of sight it is $\frac{1}{100}$, while in case of smell it is $\frac{1}{4}$.

Uses of the Law.]—This law is of great use in our every-day life. For instance, it is on account of this law that we appreciate only relative differences and are thus willing to pay the same price for all the seats in a theatre arranged in eight or ten rows. All these seats appear to be equally suitable for hearing the music on the stage.

Its Limitations—Holds good only within Limits—Sensations are not Compounds.]—But the law has its own limitations. It is only true within certain limits. A stimulus may have low intensity, in fact it may be so faint that we may not have any sensation aroused by it. Too low sounds cannot be heard, too faint colours cannot be distinguished. The stimulus, in order to be barely noticed, must pass the liminal or the *threshold of consciousness*. On the other hand, we cannot distinguish too intense stimuli, *e.g.* too loud noises, very shrill notes. There is thus an upper limen as well, and Weber's Law holds good only within these two limits. Moreover, we are not quite sure if it applies to taste and temperature. Besides, as James and Münsterberg have pointed out, the law is based on a wrong notion, viz. that sensations are compounds, since the truth is that each sensation is unique, and a strong sensation is not a compound of weak sensations but something entirely new.

CHAPTER V

FEELING

1. Nature of Feeling.

Meaning of Term "Feeling."]—The word "feeling" is used in different meanings. It means consciousness in general, *e.g.* "feeling of relation"; sensation in general, *e.g.* "feeling of warmth"; sensation of touch, *e.g.* "we feel the texture of cloth"; vague consciousness, *e.g.* we feel a good deal that is impossible to be described; and the hedonic quality of mental states, *i.e.* pleasantness or unpleasantness. The last usage is commonly accepted by psychologists.

Feeling is Pleasure or Pain.]—In its strict and proper sense, therefore, feeling is a definite mental state, which is either pleasurable or painful. Thus the qualities of pleasantness and unpleasantness are called feeling. Pleasantness and unpleasantness are general and are found in connexion with practically every other state, with sense-perceptions, memories, actions, etc.

2. Feeling and Sensation.

Feeling distinguished from Sensation.]—Feeling is subjective and depends upon "the individual and his peculiar experience," while sensation is objective, as it depends upon an external stimulus. The same stimulus sometimes gives us both sensations and feelings. As to sensation, it will always be the same from the same stimulus, but feeling will be different, as it depends on our mood at a

certain moment. An object which pleases now may be unpleasant again.

Feeling cannot be Described—If Described it Vanishes.]—Feelings are always vague and indefinite, and therefore cannot be described. You cannot describe the pleasure you feel in winning a prize or passing an examination; you alone can experience what it is; nobody else can fathom your feeling, neither can it be adequately conveyed through language. Thus we can never know a feeling, although we may know about it. As soon as you try to describe it or attend to it, the feeling disappears. When you attempt to analyse your pleasure, or attend to it, it vanishes altogether.

Quality of "Indifference"—Bain's View Criticised.]—Thus pleasure and displeasure are the only qualities which constitute feeling. Some psychologists maintain that there is an additional quality of indifference, as some feelings, *e.g.* surprise, are neither pleasant nor unpleasant, but neutral. For instance, Bain holds that a feeling may have considerable intensity, and yet be simply a state of neutral excitement. But this view cannot be seriously maintained. Indifference can be applied to a stimulus, but not to a feeling. An indifferent stimulus, says Pillsbury, is one that does not give rise to feeling; there are no indifferent feelings.

The awareness of excitement is not feeling but cognition, and surprise is not a pure feeling; its pleasantness or unpleasantness depends upon the sensations with which it is connected. We have now spoken of a "pure feeling." Let us see what is meant by this expression.

3. Feeling and Affection.

Pure Feeling called Affection—Feeling is thus a Complex of Sensations and Affection.]—Confusion is apt to arise, as is evident from the analysis of the feeling of surprise, between a pure feeling and the sensations that accompany it. To avoid this confusion, a pure feeling is denoted by

the term *affection*, meaning thereby mere pleasantness or unpleasantness, apart from the accompanying sensations. In that case the term "feeling" denotes the complex of sensations and affection. Keeping in view this technical distinction, we can say that there could be an indefinite number of feelings, but there could be only two kinds of affection, viz. pleasure and pain. Thus we can say—

Feeling=Sensation+Affection.

Feeling of Toothache Analysed.]—Taking the typical example of a toothache, which is a complex feeling, we can distinguish pain as an organic sensation from pure pain as affection, which is really a reaction against pain. Pain as a sensation can be destroyed by ether or chloroform, but pain as an affection, *i.e.* the capacity to feel pure pain, remains. When I have pain in my stomach, the pain sensation is, of course, in the stomach, but the pure pain (affection) can hardly be localised. Thus affection is abstract, while feeling is concrete.

Usage advocated by Psychologists.]—This usage is strongly advocated, among others, by Titchner, who says that all affections appear in consciousness along with the sensation from some organ, and that feeling simply means the complex process made up of sensation and affection.

No such thing as "Neutral" Affection.]—To sum up, affections are only two kinds, pleasant and unpleasant. There is no such thing as a neutral affection. Differences in feelings are to be explained by the different sensations that enter into them.

While sensations depend on a physical stimulus, affections are wholly subjective, and are liable to become blunt, if repeated.

4. Attributes of Feeling.

Attributes of Feelings: Quality, Intensity, Duration, and Extensity.]—Like perceptions, feelings are also charac-

terised by quality, intensity, duration, and extensity. The first two are the more important attributes.

Hedonic Tone.]—The quality of feelings appears in the form of hedonic tone of pleasantness and unpleasantness. A feeling must either be pleasant or unpleasant. Hedonic tone simply means the pleasure or pain which accompanies a state of consciousness. It might sometimes appear as if a mental state can be neutral, or without a feeling-tone, but, as Stout rightly points out, if we consider our " total " consciousness at any moment, we shall always discover the presence of the hedonic tone.

Measured by Experiments.]—The hedonic tone has always more or less intensity. With an increase in the intensity of the external stimulus, we notice a variation in the intensity of the feeling as well. Experiments have been made recently to measure the intensity of the hedonic tone. It is found that Weber's Law, which applied to the intensities of sensations and their stimuli, does not quite apply to the hedonic tone of perceptions.

General Results.]—The general results may be summed up thus : *

(1) If the stimulus is of the lowest possible intensity, the hedonic intensity is zero.

(2) With a gradual increase of stimulation, pleasure also appears and increases slowly.

(3) If the intensity of the stimulus keeps on increasing, pleasure will also increase up to a certain point, and thereafter it will decrease. Musical tones are pleasant, but too shrill tones are painful.

(4) Pleasure continues decreasing, till at a point it disappears entirely.

(5) If stimulation increases still further, pain will increase steadily till it reaches its maximum. Thereafter it is impossible to go, as at that stage the actual destruction of tissues sets in.

Duration of Feeling.]—The duration of feelings usually

* Cf. Warren, *op. cit.* p. 282.

depends on that of the stimulus. Their extensity is rather vague.

5. Higher and Lower Feelings.

Intellectual and Sense Feelings Distinguished.]—It is usual to distinguish between higher feelings, called intellectual feelings, and lower feelings, known as sense feelings. In the higher feelings, memory and imagination play a conspicuous part. To the student the idea of winning a scholarship in the university examination brings pleasure, that of failure brings pain. These are higher feelings. Similarly, the pleasure derived from listening to a classical melody in music is a higher or intellectual feeling; so also is the pain derived from having done some wrong against the voice of conscience. On the other hand, the pleasure I derive from wearing a smart suit of clothes, or from entertaining my guests sumptuously, or from enjoying a hearty meal, is a sensory or lower pleasure. But in quality the pleasure or pain in both cases is alike. The difference in pleasure or pain arises from the circumstances or occasions in which the feeling is aroused. In other words, affection can only be either pleasure or displeasure, but joined to sensations or cognitive elements, the complex feelings vary as to the types of pleasure or pain.

6. Rôle of Feeling in Mental Life.

Feelings play Important Part in Mental Life.]—By perceptions we come to know the external world; by feelings we know our inner world. Feelings play a very important part in our mental life. Our view of the outer world is mainly determined by our feelings. After enjoying a hearty meal we feel cheerful, and our response to the outer world is favourable. But if we are dyspeptic and feel worried, even pleasant surroundings appear to jar on us. As Warren writes:* "Some men apparently can

* Cf. *op. cit.* p. 285.

never be disheartened or insulted; others will collapse at the slightest misfortune, or bristle at the most trivial remark. The external stimuli are alike; the difference lies in their systemic condition. The same man who meets difficulties energetically and cheerfully when in good health, may sit despondent and refuse to face danger or perplexity when affected by indigestion, malaria, or other weakening influences."

CHAPTER VI

ATTENTION

1. Consciousness and Attention.

Attention a General Character of Consciousness.]—We said in the last chapter that selection was one of the principal marks of consciousness. Such selective activity is known as attention. In other words, attention is a general characteristic of consciousness. The act of selection when applied to thought is called attention, and when applied to action is called will.

What is Attention?]—Pillsbury tells us that "the fundamental phase of attention is the preparedness that determines selection." * The fact of attention implies "the narrowness of consciousness"; that is to say, consciousness always has a "focus," and it is this character that reveals the momentary activity of the mind and brings about the clearness of consciousness. In fact, attention has also been viewed as the clearness into and out of which objects move.† We know that consciousness is in a perpetual flux. Attention always implies that consciousness constantly redistributes its contents. "Attention," says Angell, "represents the very heart of conscious activity, its most important centre of vitality." ‡

2. Conditions of Attention.

Conditions of Attention.]—The conditions that determine what we shall attend to may be viewed as (*a*) Objective, and (*b*) Subjective.

* Pillsbury, *op. cit.* p. 130. † Cf. Hunter, *op. cit.* p. 128.
‡ Angell, *Psychology*, Constable (London), 4th edn. p. 80.

way or spontaneously—but not against our will—we put forth non-voluntary attention. For instance, bright lights catch my sight in an effortless way, and so loud noise catches my ear spontaneously. I am occupied in reading a book, but let myself go in a reverie, which may last long enough. After some time I suddenly realise that I lost so many minutes in thoughts other than those I was supposed to be busy with. We also attend spontaneously to any subject that we find interesting. If any object arouses an emotion, I attend to it spontaneously, *e.g.* a black piece of string in a dark room arouses my emotion of fear and I cannot help subsequently noticing it spontaneously. Again, objects which produce pleasure also elicit non-voluntary attention.

4. Scope or Span of Attention.

Span of Attention—Attention to One Thing at a Time—Napoleon's Story Untrue.]—How many things can be attended to at once? In answering this question we may lay down the general principle that we can attend to only *one* thing at a time. But *one* thing does not necessarily mean a simple thing. It may be a complex system composed of several simple things. We seem to attend to a number of things at a time. But this is an illusion due to very rapid analysis. For instance, it is impossible to attend to two persons at the same time. If you allow both of them to state their case, you will not be able to grasp both meanings in the same instant. It is said of Napoleon Bonaparte that he used to dictate several letters at the same time. This, however, is not literally true, and is a psychological impossibility. By habit and training, it is of course possible to make very rapid shifts from one subject to another, and to allow certain activities to run automatically. If you will try to converse with a friend and write a letter at the same time, you will be able to verify the fact that we can attend to only *one* thing at a time.

Four or Five Objects Grasped Simultaneously.]—As to the number of objects that could be grasped simultaneously by our attentive activity, experiments have shown that the number is four or five. Words which have a meaning can be more readily grasped than meaningless words. You can attend to five words as readily as five letters, the same number of objects arranged properly in groups more readily than scattered and disarranged objects.

5. Duration of Attention.

Attention Shifts in Waves—Meaning of "Sustained" Voluntary Attention.]—It is impossible to look at any object continuously for any length of time. Attention shifts and wavers. It proceeds in pulses or waves. Hence, in order to keep an object before your attention continuously, you must let the mental object develop itself and present to you some fresh aspects. Rightly says James: "There is no such thing as voluntary attention sustained for more than a few seconds at a time. What is called sustained voluntary attention is a repetition of successive efforts which bring back the topic to the mind. The topic, once brought back, if congenial, develops; and if its development is interesting, it engages the attention passively for a time."

Length of Attention Waves.]—We can go on hearing a lecture for two hours, or reading a novel for ten hours. But in all cases the material keeps on changing. If we attend to the tick-tick of a watch, we shall see that it is impossible to hear it all the time. We hear the sound for a second or so, it disappears again from our consciousness, it enters again, and so on. The length of such attention waves or pulsations is about six seconds.* Pillsbury says: "If one attempts to keep attention fixed upon a single point in a picture, it will be found that at least once a second something about the point will come in to crowd

* *Vide* Pillsbury, *op. cit.* p. 131.

it out of consciousness. . . . When in the popular sense attention is given to a thing for an hour at a time, attention is constantly shifting from part to part, or is turning to other objects and thoughts for longer or shorter periods. Attention for more than a second or so to absolutely the same stimulus is either impossible or results in the pathological condition of hypnotism." *

6. Inattention.

No such thing as Inattention—Implies Attention Elsewhere.]—Sometimes we are very angry with little children, because they do not attend to what we say but seem to take no notice of us. Unskilful teachers find this tendency very exasperating, and usually punish their pupils for being "inattentive." The fault is really more on the teacher's side. If he is a skilful teacher, conversant with the fundamentals of the child-mind, he will always be able to present his facts so as to arouse his pupils' interest. But as a matter of fact there is no such thing as "inattention." Inattention does not mean the total absence of attention: inattention to one subject simply means attention to some other subject. If you are telling a story and find that I am not listening to you, you may be sure that my attention is being directed elsewhere, in some other channels which are more interesting to me than your story. If the mind is absent from one channel, it is surely present in another channel. There is no such thing as complete absentmindedness or total inattention.†

Want of Concentration leads to Scattered Attention.]—

* *Vide* Pillsbury, *op. cit.* p. 131.

† "Complete inattention is noticed during sleep or periods of unconsciousness. Even in sleep there is apparently some selective adaptation to stimuli. A sleeping man will be aroused by his name even if spoken in a tone so low that he has heard nothing else of the conversation. In profound slumber a mother is 'set' for the movements of her child, the nurse for the patient. . . . The so-called states of inattention of the normal man are really states of attention, but of attention to something at the moment undesired."—Pillsbury, *ibid.* (p. 133).

Sometimes we are unable to concentrate our attention to a certain object of study. This is due to a habit of restlessness or bad mental surroundings. In such cases our attention wanders from one topic to another without creating any special interest, and is called scattered attention.

From what we have already said on the selective function of consciousness or attention it follows that attention cannot be evenly distributed over any field. If such a thing were possible, there would be no consciousness.

CHAPTER VII

PERCEPTION

1. Sensation and Perception.

Definition of Perception—Complexity of Perception.]—We have already said that sensations are the simplest and the most elementary processes of which our mental life is composed. Not being actually found in the adult life, they can only be abstracted from the concrete complex of thought. They are thus the abstract units of thought. But the concrete units of thought are perceptions. A perception is a group of sensations having a meaning. In our actual mental life, we never have a single sensation in isolation, but each moment our consciousness of objects —called Perception—reveals a number of sensations welded together into a concrete whole. When I see a picture hanging on the wall, sensations of sight and touch, those of various colours and shades, smoothness, the paper or the frame, etc., are grouped together in a particular background, by which I come to know the nature of this particular object to be a picture. When I wake up in the morning and open my eyes, the whole visual field is stimulated at once. When I hear anything, it is not a single sound but a complex of sounds or noises. At each moment we have not a single sensation but a complex or group of sensations. Unless I interpret the meaning of a sensation-group, there is no "perception." My recognition of the object before me as a picture also presupposes the fact that I have seen pictures in the past,

and this picture is like those, hence I perceive it at once. In other words, a perception involves memory, imagination, and inference as well. It is thus a very complex mental process. We may, therefore, lay down that perception involves not only pure sensations but a good deal of the thought-activity.

Perception=Sensation+Thought.

Sensation and Perception distinguished.]—Memory and imagination in particular play a very important part in the interpretation, correction or localisation of sensations. To one who does not know Arabic it is extremely difficult to repeat even a single sentence spoken in that language, because one is unable to interpret these sensations of sound in reference to any cognate context. If you attend a lecture delivered in a language entirely foreign to you, you will only catch a number of sounds—even those not in entirety—but will not be able to understand anything, because you fail to recall anything similar to those sounds. Thus, we may as well say, after Pillsbury, that

Perception=Sensation+Memories.

Titchner also points out that "the life of perception is a life of imagination" (*ibid.* p. 364). We may thus distinguish between sensation and perception as follows:

Sensation	Perception
1. A simple mental state.	1. A complex mental state.
2. Abstract unit of thought.	2. Concrete unit of thought.
3. Of qualities.	3. Of objects.
4. Bare awareness of an object.	4. Localisation and interpretation of sensations, and referring them to definite objects.
5. Objective and Subjective.	5. Objective.
6. Presentation.	6. Presentation and Representation.
7. Passive.	7. Active.
8. Previous experience plays no part in pure sensation.	8. Impossible without necessary part played by experience.
9. Unreal.	9. Real.

2. Analysis of Perception.

Perception Analysed—Fusion of Sensations and Thought.]—What happens when I see a horse running in the street? If we analyse this mental process we find that first a number of sensations, *e.g.* of the colour, size, movement, etc., of the horse, are unified into a group. Then it recalls images of horses seen in the past, and recognition that this horse is similar in appearance to those I have been acquainted with in the past. The sensation-group supplemented by a recall of memories has a background of its own, which is its meaning, and which enables me to be sure of this object being a horse. Thus we see that perception* is a complex mental process. The whole complex process takes place in a moment, and it must not be supposed that our analysis of perception refers to any actual order of the fusion of sensations and thought. It is all done implicitly, and it is therefore not literally true that a perception "contains" these elements. "The thing perceived," as James puts it, "is the object of a unique state of thought."

3. Apperception.

Rôle of Previous Experience in Perception—Assimilation of the New with the Old—Meaning of Apperception—According to Herbert—No Knowledge without Apperception—Perception involves Apperception.]—Our previous experience plays a very important part in the act of perception. Without it we are unable to interpret or understand the nature or meaning of the group of sensations. It is this knowledge which serves as the background of the new impression. We all know how we are bewildered at new faces, new objects, new situations. Unless we can *assimilate* the new with the old there can be no perception—in fact, no knowledge at all. Assimilation is the very

* "The consciousness of particular material things present to sense is called Perception" (James, *ibid.* p. 312).

soul of knowledge. All recognition, discrimination, classification, etc., implies assimilation. When a new idea arises, it recalls a group of similar ideas previously experienced, and is owned by the mind after being assimilated with the old knowledge. Such assimilation of the old and the new knowledge is termed Apperception by Herbert. According to this German philosopher, the mind contains a "mass of ideas." Greater knowledge means a greater complexity of this mass of ideas, called the "apperception mass." When a new sensation or a new idea comes to the mind, it is said to be "apperceived" by this pre-existing mass. Apperception is therefore nothing but the reacting activity of our mind, the "psychic reaction." Mere words spoken do not convey any ideas. Words are merely symbols; the ideas they represent are supplied by the mind. By apperception each new idea is fixed in its proper setting, and there is no doubt that what we see, hear or feel, depends to a large extent upon the setting of the object in the totality of our consciousness. "The apperceiving conceptions usually stand like armed soldiers within the strongholds of consciousness, ready to pounce upon everything which shows itself within the portals of the senses, in order to overcome it and make it serviceable to them." * Thus, apperception is the process of taking anything into the mind, and fixing it there in its proper context and background. The stomach digests and assimilates food and then tissues are built up. Similarly, the mind connects and assimilates new ideas with the old, and then knowledge is possible. It also follows that without the activity of the mind no knowledge is possible. Thus every act of perception involves apperception.

Bearing on Educational Theory.]—It is obvious, then, that the mind develops from within. "The teacher exposes 'things' to the interior light of the mind. If this light is absent the 'thing' is not understood, just as

* Quoted from Lazarus by Dexter and Garlick, *Psychology in the Schoolroom*, Longmans, p. 185.

when light is absent it is impossible to see or understand a picture." * If you want to be sure that what you have taught is understood by your pupil, make him reproduce the meaning or gist of the whole in his own words. If he can do that, it means his mind has "assimilated" the new knowledge.

4. Forms of Perception.

Two Forms of Perception: Space Perception—Time Perception.]—Perception is our consciousness of objects. But objects are parts of a system in which the relations of space and time are prominent. The psychologist is interested in the investigation as to how we come to know the size and shape of things, their position and distance, etc. Hence we have to study these spatial relations. Besides, we are also aware of change and duration. How we have the mental state which includes these temporal relations is also an important problem for psychology. Thus, we may study separately the mental state which includes the spatial relation as our perception of space, and that which includes the time relations, the past, the present, and the future, as our perception of time. We shall now treat of these two forms of perception very briefly.

5. Perception of Space.

Extensity.]—We have already mentioned "extensity" as one of the chief attributes of sensations. We agree with James that this attribute exists in *all* sensations. Extensity is the foundation upon which our perception of space is built up. James illustrates the meaning of extensity very aptly: "The quality of voluminousness exists in all sensations, just as intensity does. We call the reverberations of a thunder-storm more voluminous than the squeaking of a slate-pencil; the entrance into a

* Quoted by Dexter and Garlick, *ibid.* p. 186, from Nicole.

warm bath gives our skin a more massive feeling than the prick of a pin; . . . a solitary star looks smaller than the noonday sky. . . . Repletion and emptiness, suffocation, palpitation, headache, are examples of this." *

Basis of Space Perception.]—This sense of "volume" or "vastness" or "spreadoutness" is given to us in a special degree by the skin and the retina. In other words, our space-world is mainly built up by sight and touch. According to James it is this extensity which is "the original sensation of space out of which all the exact knowledge about space that we afterwards come to have is woven by processes of discrimination, association, and selection." *

Original Datum of Space Perception.]—Hering has also given some very appropriate illustrations of the quality of *extensity*, which we treat as the original datum of our consciousness of space. He says, for instance, that if we try to see darkness with our eyes closed, we shall feel the extensity of darkness. The same is the case if we were to enter a dark room with our eyes open: it would appear as if a sea of darkness were surging right in front of us. Even in a dark corner of a room, which is otherwise lighted, we shall have the same sensation. It is this kind of sensation which creates some horror in children's minds when they are left alone in a lonely place or in darkness.

Construction of Real Space—Discrimination by "Movement."]—Out of this original sense of volume is constructed real space. It contains with it all the possibility of the distinctions of position, size, direction, distance, etc. A new-born babe can make no such discrimination of position, size, distance, etc., and his experience is that of a vague and chaotic complex of buzzing sensations. How do we discriminate various distinctions within this chaotic experience of volume? This is done gradually, and not until we bring into play *movement*. "Moving parts, sharp parts, brightly coloured parts of the total field of

* James, *op. cit.* p. 335.

perception 'catch the attention' and are then discerned as special objects surrounded by the remainder of the field of view or touch." * We are not aware of positions outside each other until movement comes to our aid. In a distant field of vision, we at once catch sight of a moving object, and form our idea of position and distance in reference to the moving object.

And by "Local Sign"—What is "Local Sign"?]—The process of discriminating positions in the original sense of volume by movement is further helped by *local signs*. It is the "local sign" that suggests the position. "Local sign" has not been quite accurately described yet, but in general it is something which leads us to distinguish two sensations as distinct in position, although they belong to the same class of "touch sensations." For instance, if I press my palm on the table, I can distinguish within a general touch sensation several locally distinct sensations, which differ because of this or that region of the palm with which they are connected. Mellone defines "local sign" as "a minute difference attaching to a sensation according as it is connected with one part of the body rather than another." † Thus, the sensations of touch arising from different parts of the body have their different "local signs." It is by the local sign that when we are touched we can tell accurately what particular part of the body our sensation comes from.

Three Factors Co-operate in Space Perception: Extensity, Movement, and Local Sign.]—Thus we discover the three factors, which co-operate in our perception of space. These are: extensity, movement, and local sign. All the three are necessary, and without the help of any of these our perception of space is impossible. We may notice this fact in the case of touch and sight separately for the sake of convenience, without implying their actual isolation, since both co-operate from the very beginning in the process of space perception.

* James, *op. cit.* p. 338. † Mellone, *op. cit.* p. 343.

In the Case of Touch.]—We have our perceptions of touch through the hands and finger-tips. But they as such cannot give us any definite idea of position on the surface of our body unless we bring movement into play. By moving the hands over the body, or the fingers over the forehead, we have a notion of positions on the surface of our body. Touch without movement (known as "passive touch") cannot give us the perception of positions. It is necessary to bring in movement so that its latent local signs may help us in forming the idea of position. Thus we are able to know the distance and direction of things from one another.

In the Case of Sight.]—In the case of sight also, the same three factors, viz. extensity, movement, and local sign co-operate. The retina, as we know, has its local signs. Without moving the eye, we could not have much of space perception. If we had one eye only it would have been impossible to have any clear and distinct perception of space. By the eye we perceive surface only and not distance.

6. Perception of Time.

Duration—Basis of Time Perception.]—This is very much less known than the perception of space. More correctly, it should be called the sense of time, and not the perception of time. It is based on *duration*, which we mentioned as an attribute of all sensations. Every process must be qualified by change, and must therefore have some duration. A sensation, being a mental process, howsoever brief, must have duration. As extensity was the original datum in space perception, duration is the original datum in the perception of time. Our conscious life being a flow, all our sensations can be arranged as before or after a given sensation.

The "Now" of Perception—Covers Three or Four Seconds.]—Thus in the continuum of time we discriminate the before and the after, or the past and the present, with

reference to the present moment, or *now*. But this "now" of our perception is not like a mathematical point but is "a spacious present," and covers a duration of about three or four seconds. In other words, it is an interval having some size of its own, and is not an abstract line of demarcation between the past and the present. Thus, the "now" means the totality of our experience covering the duration of three or four seconds. By means of memory-images we can extend the present into the past and speak of the past happenings as if they are taking place just now.

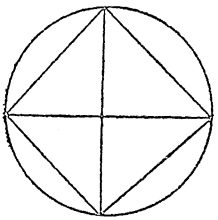
Varies in Duration—Time as Filled and Empty.]—Stout rightly points out that this spacious present varies greatly in duration: it is felt shorter or longer according as our circumstances are favourable or otherwise. When you are waiting for any one, time seems to move very slowly, and you look at your watch over and over again. In pleasant conversation, on the other hand, time seems to fly. Then again, if you are busy, time passes quickly, otherwise empty time is a great bore. If the time is filled up with a number of events, it will appear shorter than if it were to pass empty.

7. Illusion.

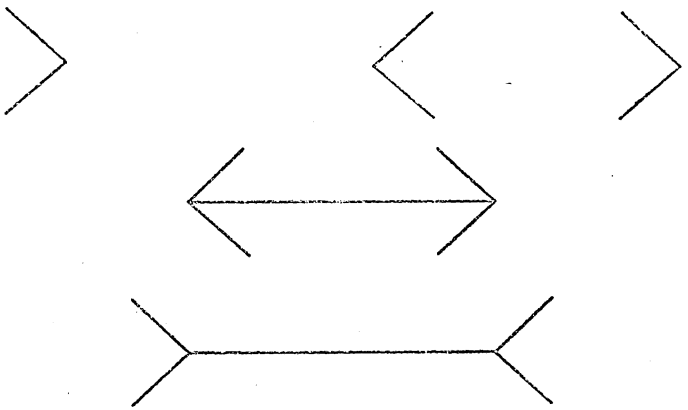
Illusion as False Perception—Misinterpretation of Sensations.]—We said above that perception depends upon interpretation in the light of our previous knowledge. This point is further illustrated in the fact of illusions.* An illusion is a false perception. Such false perception arises from the sensations suggesting the wrong ideas. The reason may be that these wrong ideas have somehow been intimately bound up with the sensation, or because the sensation has been put in a wrong context. The sensations are all right, their interpretation is faulty. Thus, in fact, the senses are as a rule not deceived, but our mental reaction is faulty. Illusions arise from all kinds of sensations, but optical illusions are most frequent.

* Read Pillsbury, *op. cit.* p. 196 f.; Angell, *op. cit.* p. 162 f.

Nature of Illusions—Illustrated by Examples.]—The following instances will enable us to understand clearly the nature of illusions: "When we come into a darkened room where sits a spectral form—an experience which, as children, most of us have had—we see a person with startling clearness; and the subsequent discovery that the supposed person consists of clothing hanging upon a chair, is hard to accept as true" (Angell). On a moonlit night you take a tombstone for a ghost and feel the palpitation of your heart out of fear. In the adjoining diagram,* in which a square is inscribed in a circle, you see the circle appearing broken or flattened at the curves of the square.



The Müller-Lyer Illusion.]—In the following figure,



Müller-Lyer illusion.

known as the Müller-Lyer illusion, the distance between the left and the central appears much longer than that

* Taken from Titchner, *Experimental Psychology*, p. 160, after Pillsbury.

between the central and the right. It is because the eyes do not travel from vertex to vertex. In the lower arrow-heads also the horizontal lines are equal in length but appear unequal.

Then, again, while standing on a bridge over a running stream, the bridge appears to move upstream. Another instance is the common error of overlooking misprinted words.

We have also illusions of sound, when, for instance, any slight sound at the dead of night is mistaken for the movements of burglars. When we are expecting a friend, the footsteps of any passer-by will be mistaken for our friend's arrival.

While the illusion lasts it is as real as perception. But later on we come to know that our interpretation was erroneous.

8. Hallucination.

Illusion and Hallucination Distinguished—Examples—No Objective Stimulus in Hallucination.]—In illusion, as we have seen, an object is always present, but it is only misinterpreted. In the case of hallucination, on the other hand, we only feel the presence of an object, though the object is really non-existent. If you partly dip a stick in a reservoir of water the stick will appear bent, though we know that it is actually straight. This is an illusion. The object, viz. the stick, is there; we only take it to be bent when actually it is straight. But when a drunkard sees all kinds of animal shapes appearing before him, he begins to cry and tries to kick at them. There is no misinterpretation here, since the sensation does not actually exist. The drunkard feels the existence of objects which never actually existed. An insane person sometimes keeps on talking as if he is addressing some one, while actually nobody is present there. The commonest type of hallucination is when we hear our name called aloud. We also meet patients in a lunatic

asylum who behave in response to several voices they are hearing while actually there is not a single voice calling them. We also know that patients suffering from acute fever sometimes begin to mutter several words and perform movements as if they are seeing some people. All these are cases of hallucination. Illusions may therefore be distinguished from hallucinations by the fact that in the former there is always present a real external object, while in hallucinations there is no objective stimulus.

CHAPTER VIII

MEMORY AND IMAGINATION

1. Definition of Memory.

Memory Defined—"Familiarity Mark" as Essential Characteristic of Memory.]—Memory may be defined as "a state of consciousness bearing the familiarity mark," *i.e.* any state of consciousness known to have been experienced by me in the past. In other words, it is "a reinstatement of an old experience, with the knowledge that it is old." * James observes: "Memory is the knowledge of a former state of mind after it has already once dropped from consciousness; or rather it is the knowledge of an event, or fact, of which meantime we have not been thinking, with the additional consciousness that we have thought or experienced it before. "In modern psychology," says Titchner, "a memory is an idea accompanied by associated ideas and the mood of at-homeness." Thus the most essential characteristic of memory is the consciousness that the experience I am having at present is an old experience. In other words, the reinstated fact of consciousness possesses the "familiarity mark" or recognition. For instance, I accost a man in the street and tell him that he seems to me a familiar figure. I try to think of him in a definite context, the place where I met the friends in whose company I saw him, and other events,

* Read Pillsbury, *op. cit.* chap. viii; Angell, *op. cit.* chap. ix; James, *op. cit.* chap. xviii.

and in a little while am able to recollect his name. Hearing his name, he expresses a sense of delight and familiarity, and gives me a warm handshake. Our thought then swings through so many familiar scenes in the past, and while talking of these details, both of us are in the mood of "at-homeness," because of mutual recognition after the lapse of a number of years.

2. Analysis of Memory.

Memory Process Analysed—Learning—Retention—Recall—Recognition.]—If we analyse a complete memory process, we find that it has several stages. Some psychologists * name four such stages, viz. Learning, Retention, Recall, and Recognition. These four processes are intimately related and interdependent. Learning is a process of forming associations and connexions in the mind. We learn facts in their proper context much more easily than isolated events. In fact, merely isolated facts cannot be learnt. Some kind of association, natural or artificial, is bound to be formed. Moreover, repetition facilitates learning. And unless we learn facts, there is nothing for retention. We can only retain those facts that we have learnt. At the same time, learning without retention is an impossibility. Whatever we learn leaves a mark, however faint, on the plastic brain. By repetition the mark becomes deeper, and renders recall easier. Now, retention can only be proved by recall. We can only know of a certain fact having been retained in the mind if we can recall it at an appropriate moment later on. Those ideas that were never learnt, and therefore never retained, can never be recalled. Then, again, if we recalled past events but failed to recognise them as having been experienced by us in the past, they are quite useless. Recall without recognition has no value. Thus all these four aspects of learning, retention, recall, and recognition are closely interrelated.

* *E.g.* Pillsbury.

Three Stages: Retention, Recall, and Recognition.]—Learning is, of course, implicitly implied in memory. It is a preliminary without which the memory process cannot exist. But it is so general an aspect that we may take it for granted, and speak of three stages only, viz. retention, recall (or reproduction), and recognition.

3. Retention.

Retention is Liability to Recall—Ideas not "Stored" in Memory—In Memory Ideas exist only as "Tendencies" or "Pathways"—Unconscious Cerebration—Memory as a Physiological Quality.]—"Retention means *liability* to recall." The popular conception of memory as a store-house of ideas, a place where ready-made ideas experienced by us in the past are stored for our future use is not correct. When I see a man after some years and recognise him as a friend, what has actually happened is not the mere pulling out of the idea from its seat somewhere in the memory. An idea exists in the mind only so long as we are conscious of it. When we are not conscious of it (but are thinking of other ideas), it is not in the mind. Yet, when we think of it again, it appears before us with the usual mark of familiarity, which means that it is not an altogether new experience. If so, where was it all this time? The answer is, that it existed simply as a *tendency* to be thought of again, as a mere *possibility*. It existed in the brain as a *pathway*. An idea once entering the mind is never entirely lost, since any modification or nervous path in the brain can never be completely effaced. It always leaves some kind of trace behind. In recollecting, these traces are re-excited and the corresponding idea reappears. This is known as unconscious cerebration. This activity goes on even in sleep. What we have learnt during waking hours is not wiped out but abides as unconscious cerebration. According to James, the power of retention is inherent in the brain, and cannot be modified by any extraneous influences. He speaks of

memory as "a physiological quality, given once for all which we can never hope to change." Accordingly, what is called improvement of memory is not really an improvement of retention but in the method of attention.

Conditions Favourable to Retention—Attention—Interest—Our Physical Conditions—Freshness in the Morning—Intention to Remember—Striking Experience—Repetition and Practice—Use of Repetition—Intelligent Repetition.]—The conditions favourable to retention are mainly those favourable to attention. Our retention power depends, in the first place, upon the attention which we are able to direct on our original experience. Things or events which are interesting to us are always retained in our memory. Graphic descriptions of certain events, interesting cases in the law courts, and all other events which aroused our interest when we originally experienced them, are easily impressed on our brain. Again, our own subjective attitude, which mainly depends on our physical condition, is also an important factor. For instance, what we learn in the morning when we are quite fresh is more easily retained than our experiences later in the day when we may be tired or hungry or overtaken with any business worries. Another factor determining our power of retention is the *intention to remember* at the time when an experience is had originally. Many details cannot be remembered simply because we never intended to remember them. Then again, the more striking the experience the more easily it is remembered afterwards. Any experience that affects us in a special way, that appeals to our whole personality, is easily remembered. Lastly, repetition and practice help in the fixation of an idea in our brain. As each idea leaves a mark on the brain, it is obvious that repetition will deepen such mark or nerve-path. It is really the law of habit. Repetition combined with practice is a very important factor in retention. It is said that a mathematical prodigy practised on the stage for several years and was then able to memorise "204 digits

in less than nine minutes," while before he required double the time. The golden rule for the student who prepares for an examination is intelligent repetition of the facts he wants to remember. We shall illustrate these laws further when we deal with "Cramming" and "Forgetting," and the distinction between a good and a bad memory.

4. Recall or Reproduction.

Retention inferred from Recall—Meaning of Recall or Reproduction.]—We said above that retention was only inferred from recall. That we can recall certain events is the only evidence of their retention in memory. We do not know what we know except by recalling it. Recall or reproduction means the reinstatement of a past experience after an interval during which it has not been before our consciousness. I think of a friend, who left for America many years ago. I can recall almost all the circumstances connected with his send-off, the other friends who surrounded him at the docks, the dress he was wearing, the luggage he was carrying, the steamer he was sailing by, and other particulars. Again, I can recall many lines of poetry which I learnt at school in the days of my childhood. Passing by my old college, I can recall several pleasant and unpleasant incidents that happened there during the time I was a student.

Laws of Recall are Laws of Association—Context supplies the "Cue"—Accurate Recall—Learn in Various Contexts—Rôle of Illustrations.]—The laws of recall are the laws of association, which we shall deal with presently. Nothing can be recalled out of context. An appropriate suggestion called the "cue" is needed to arouse the other ideas associated with it, and then we are able to recall a whole situation in all its details. When we fail to recall the time and place connected with a certain event, or the name of the person who meets us after a very long time, our failure is either due to a want of proper associations formed

in the mind, or to an inappropriate cue. The chief rule to observe in making our recollection accurate is as follows: "The only rule that can be given for the improvement of recall is to learn a new fact in connection with all the possible situations that may require its application. Most learning is in one connection only or in a few at most. The value of a fact increases with the number of connections that it makes, for each new connection makes it available in a new place and at a new time." * For that very reason it is always recommended to illustrate a principle by examples. When you have explained a theorem in geometry or a rule in algebra, give some exercises to students, and see that they are able to apply the rule correctly. This is the surest way to fix up appropriate associations, which will help to make recollection easier.

We shall illustrate the laws of recall in detail, when we study the laws of association on which they rest.

5. Recognition.

Recall followed by Recognition—What is Recognition?—"Recognise" and "Remember."]—Recognition is the sense of familiarity with which we look upon a recalled experience. There would be no utility or meaning in recall if it was not followed by recognition. Recognition is "an awareness of the time and place of origin of the memory image." On meeting an old class-fellow I recognise him as a chum of my school days and remember many incidents connected with the place where I used to meet him and the time when I used to enjoy his society. Sometimes we experience a sensation or have an idea too often, and so fix it up in too many contexts, which produces a confusion at the time of recall. In such cases we *recognise* but do not *remember*, since "its associates form too confused a cloud." The image is there at once, but we cannot quite localise it in time and place. James illustrates the

* Cf. Pillsbury, *op. cit.* p. 219.

" nascent cerebral excitations " produced in such cases by the example of our trying to recall a name, and observes : " It tingles, it trembles on the verge, but does not come. Just such a tingling and trembling of unrecovered associates is the penumbra of recognition that may surround any experience and make it seem familiar, though we know not why." * I sometimes meet several of my old students. I recognise their faces all well, but fail to remember their names. Sometimes the name suggests itself by recalling the proper context or background, the time when he was my student, the class he belonged to, the room in which he attended my lectures, etc. Sometimes the student supplies the cue, and refers to certain outstanding facts connected with the class he belonged to, and this helps bringing up his name before my consciousness, and recognition is complete. Similarly, when remembering the past events of my life, I do so in reference to some outstanding facts or prominent events, which constitute a kind of framework of recognition.

Recognition is the Familiarity Mark.]—Recognition, which is " the mark of familiarity," is the principal feature which distinguishes memory from imagination, as we shall see later on. We recognise objects as well as ideas in the same way. Immediate recognition gives us a sense of " familiarity." Thus recognition, in general, depends upon association and the sense of familiarity, which in turn arouses a mood of pleasantness or confidence.

6. Laws of Association.

Laws of Association—Explain Recall of Ideas.]—We have seen that ideas are retained in the mind not as " ideas " but as predispositions or tendencies. The question as to how these ideas are recalled is answered by the laws of association. In other words, the laws of recall are essentially the laws of association.

* Cf. James, *op. cit.* p. 299.

No Idea exists in Isolation—But in a "Train of Ideas" —Principle of Association.]—An idea existing in complete isolation is an impossibility. It always co-exists with other ideas in the form of a "train of ideas." Several ideas co-exist by the continuity of attention, and as long as interest holds them together, they form a train of ideas. Recall is the principal element in every train of ideas; and recall is based on the principle of association, which says that things which co-exist in sense-experience tend to co-exist in thought.

Kinds of Association.]—A classification of the laws of association has come down from Aristotle, elaborated in modern times by Hume, Hartley, and James Mill. It is usual to distinguish three kinds of association: by contiguity, by similarity, and by contrast.

(1) *By Contiguity.*—Association by contiguity means that if two objects (or states of consciousness) are experienced together, one tends to recall the other. For instance, when I think of the college, I think of the room in which I lectured; or, the thought of Waterloo suggests the thought of Napoleon; the thought of a restaurant arouses the thought of guests seated at tables waiting for refreshments; the thought of a railway track suggests that of a train.

(2) *By Similarity.*—Association by similarity implies that an idea suggests a similar idea. The sight of a picture suggests the idea of my friend whose picture it is. On seeing a stranger, I think of a friend whom he resembles. The thought of Mussolini leads me to think of Napoleon or Bismarck.

(3) *By Contrast.*—Association by contrast means that an idea tends to suggest its opposite. "Black" suggests "white"; "giant" suggests "dwarf"; "hot" suggests "cold."

To these are sometimes added the laws of Frequency, Vividness, Recency, and Succession.

Law of Frequency.]—Ideas that are frequently con-

joined in consciousness, *i.e.* experiences which are repeated frequently, tend to revive each other. "The Great War" suggests to me the last European War; lines of poetry repeated frequently are recalled more easily than those read once or twice; a man who visits us frequently is recognised more easily than a stranger.

Law of Vividness.]—The law of vividness says that ideas which are more vivid or intense tend to be suggested more easily than others. We can easily recall a disaster, an earthquake, a drowning accident, etc.

Law of Recency.]—The law of recency says that *recent* experiences are more easily recalled than those that took place long ago and were never repeated. It is much easier, for instance, to reproduce quotations learnt recently than those learnt ten years ago.

Law of Succession.]—Ideas experienced in succession tend to recall each other. For instance, the thought of the tree recalls the lightning that struck it.

7. Law of Contiguity the Primary Law of Association.

Law of Contiguity the Primary Law.]—Similarity, contrast, succession, frequency, vividness, and recency are all secondary laws of association, and depend ultimately on the law of contiguity, which is the primary law of association.

What is known as the law of similarity is really another name for apperception. In reality there can be no association by similarity. Association is a repetition of past co-existences, but if we say that X is similar to Y, and therefore X suggests Y, no co-existence in the past is implied. What similarity suggests "depends upon the present point of view of the person in whom the suggestion takes place" (Fite). Stout maintains that there can be no association by similarity but a mere reproduction based on continuity of attention.

Succession is really included in contiguity. Contiguity may be as to time or place. In the former case, experiences occurring at the same time or following each other, either by mere sequence or by a causal sequence, may be included.

Frequency, vividness, and recency are also secondary laws, and are too general to be considered as separate principal laws.

8. Physiological Basis of Association.

Physiological Basis of Association is the Law of Habit.]—It is wrong to suppose that association is a kind of force that binds together mental states. Mental states are retained in the mind only as mental dispositions, and the physiological basis of association is the law of habit, by which paths are drawn in the nervous system and synoptic connexions are formed. As James says: "When two elementary brain-processes have been active together or in immediate succession, one of them, on re-occurring, tends to propagate its excitement into the other." * Mental states follow each other because the nervous excitements set up by them follow each other, and not because there is any mental tie connecting them together.

9. Kinds of Memory.

Three Kinds of Memory: Mechanical, Ingenious, and Judicious.]—Let us now revert once more to our study of the memory process. Various kinds of memory have been distinguished. Kant distinguished three types of memory: (1) Mechanical memory, depending on associations by contiguity; (2) Ingenious memory, depending upon some kind of fanciful similarity; and (3) Judicious memory, depending "mainly on the natural working of the law of similarity."

Rote Memory and Logical Memory.]—It is usual to

* *Ibid.* p. 256.

distinguish rote memory and logical memory.* The former depends on artificial sequence, without any intelligent grasp or assimilation ; the latter depends on assimilation, *i.e.* when the facts are first understood and then learnt. The latter is the usual way in which we acquire ideas. This method is much better than learning by rote, since meaning plays an important part in it. Where, however, natural associations or significant connexions are not possible, we have to learn by rote. For instance, mnemonics have their legitimate use. Dates which could not otherwise be easily remembered are arranged in the form of mnemonics by a skilful device, or the legitimate moods of the four figures of a syllogism are conveniently remembered as Barbara, Celarent, etc.

Personal and Impersonal Memory.]—Another classification distinguishes personal and impersonal memories. In personal memory we remember not only the facts learnt in the past but various other personal details connected with them. Thus, when I think of a particular book, I recall not merely its subject-matter but the person who presented it to me, the pen with which he subscribed his name, the friends who borrowed it from me, etc. In impersonal memory, only the facts retained are reproduced, *e.g.* when I am answering an examination paper, I recall only such knowledge as is relevant to the questions asked.

10. Memory Types.

Memory Types : Visual Memory.]—People differ in the way they remember past events. Some derive their memory materials from one sense, some from the other, and some from more than one. The majority have a visual memory. They remember their past experiences in picture forms. A name of anything mentioned to them will at once recall the picture of the object. They visualise

* *Vide* Pillsbury, *op. cit.* p. 208.

their whole experience. The Taj Mahal at Agra will at once bring before them a picture of the wonderful building as they saw it in the past. A river will suggest to them flowing waters, boats, bridges, people bathing, etc. The visual type of memory is by far the most extensive.

Auditory Memory.]—Next comes the auditory memory. Those who possess this type recall their experiences in terms of sounds connected with it. A factory will not suggest to them a picture of mechanics and other workmen seated in long rows busy with their work, but the noise of the engine and the puffs of smoke passing through the chimney, etc.

The other three senses—smell, taste, and touch—do not usually give separate memory types, but exist in subordination to the visual or the auditory types.

Verbal Memory.]—Another type is known as verbal memory, by which mere words suggest the ideas. In reading a passage or in conversation, I have before me words of a language. These serve as symbols of ideas. Even our inner thinking is usually carried on in language. The visual and auditory images mingle together, more or less, in thinking through words.

Mixed Type Very Common.]—The usual type we come across is a mixed type, in which the visual or the auditory images are mixed with those of other senses.

11. Good and Bad Memory.

Memory a Physiological Quality according to James—Therefore Differences are Congenital.]—According to James, memory being a physiological quality, given once for all, the distinction between good and bad memory must be based on congenital constitution. A person in whose brain the various nerve-paths are repeated with frequency and force possesses a good memory. As James says: "Memory being thus altogether conditioned on brain-paths, its excellence in a given individual will depend partly on the *number* and partly on the *persistence* of these

paths." * He mentions that some minds are like "wax under a seal," which catch and retain any and every impression; while others are like a jelly, vibrating at every touch but retaining no permanent mark.

Good Memory.]—A good memory depends upon the ease of retention, the depth of the impression, the frequency of recall, the accuracy of reproduction, and relevance to purpose.

Cramming.]—Cramming is not a good mode of study and is to be deprecated because when you try to overburden your memory, just before the examination, with a number of facts and details, you cannot "set" them properly, and, thus, without forming many associations, these facts are liable to be forgotten very speedily. Cramming has therefore no educational value, and students should regularly work throughout the term instead of carrying on an intensive study before the final examination.

12. Forgetfulness.

Forgetfulness: Not a Drawback, but is Useful within Limits.]—If learning means the tracing of pathways in the brain, it is obvious that inasmuch as a pathway cannot be entirely wiped out, no idea once entering the mind is ever completely lost. But, as we saw under "Attention," it is impossible to attend to any object with a uniform distribution of consciousness: the selective activity is always present. This means that those events which aroused our interest and were the object of our focused attention will leave a deeper mark than those that existed merely on the margin of attention. The latter will tend to fade away, recede into the background as it were, though not entirely lost. It is a great relief to us that we can forget several unpleasant events that happened in our life, otherwise it would make us extremely miserable. Forgetfulness, instead of being a drawback, is a condition of the usefulness of memory. Forgetting demonstrates once

* *Op. cit.* p. 292.

more the selective function of consciousness. Only important, relevant, useful, and outstanding facts are remembered, and a vast number of trivial details of our everyday life are forgotten. We do not remember how many books we consulted in the library last week, the people whom we passed in the street while driving in our car, the audience we see in a music-hall, the time we spend at breakfast, the letters we receive, the vegetables served with meals, etc. If we did not forget such details, we should be overwhelmed with a confounding mass of facts; we should be "lost in the wealth of our own ideas," and "should not see the wood for the trees."

Forgetting is thus very useful. It does not, however, mean that forgetting should proceed beyond a certain limit. It should always be judicious, depending on our needs, purposes, and interest. A good memory always requires a certain amount of forgetting, which is a distinct advantage to it. But only those things which ought to be forgotten should be forgotten. When I am writing these lines, I am forgetting all about the nasty motor accident that I witnessed last night, or the football match I saw the other day, or the dress I put on yesterday, or the books I read to-day.

We are liable to forget several important facts under the influence of disuse, and when we recall those ideas, they do not readily come, and we have to scratch our head and feel the tingling sensation within it for a time till revival takes place.

Thus we see that forgetting serves a very useful purpose. "If we remembered everything," says James, "we should on most occasions be as ill off as if we remembered nothing." This is well expressed by Ribot when he says, "We thus reach the paradoxical result that one condition of remembering is that we should forget. . . . Oblivion, except in certain cases, is thus no malady of memory, but a condition of its health and its life." *

* Quoted after James, *op. cit.* p. 300.

13. Imagination.

Imagination: Reproductive (Memory), Constructive.]—Imagination is the process of "reproducing copies of originals once felt" (James). If the copies are "literal," the imagination is reproductive; and if various elements of original experiences are formed into totally new combinations, it is called productive or constructive.

Reproductive imagination is otherwise known as memory, so that the term imagination is usually confined to constructive imagination. A memory image is always recognised by us as the reproduction of a past event, while there is no such mark of familiarity in imagination. For instance, I can combine the body of a horse with the head of a man, and imagine a very strange-looking thing, called the centaur. Centaurs do not exist in reality, but taking the memory-image of a man's head, I combine it with a memory-image of the body of a horse, and form an imagination image of a centaur: in other words, I fancy a centaur. If I mention the word "London," even those who have never been to that city will see before them an imagination image of a large city. They will imagine it more or less after the pattern of some large city, like Calcutta or Bombay, which they might have visited and of which therefore they might have retained memory-images. Thus, imagination is "the consciousness of objects not present to sense." We can imagine a person whom we have never seen but who is described in a book; we can imagine a star that we cannot see, or a melody which we cannot hear, or a taste that we cannot actually have.

14. Imagination and Memory.

Imagination and Memory are both Centrally Aroused—Percepts aroused Peripherally—Revival by Association in Both.]—Imagination and memory agree in two respects. Both processes are centrally aroused. In this they differ

from percepts, which are peripherally aroused. In other words, while perception presupposes the contact of a sense-organ with a stimulus, in the case of imagination and memory, such external contact is not necessary. Images are aroused from within the brain, without reference to any external stimulus at that time. Then again, in both imagination and memory the revival of images takes place by the laws of association.

But Recognition absent in Imagination.]—At the same time, they differ in an important respect. Recognition, the mark of familiarity, the mood of at-homeness, which is essential to memory, is not found in the case of imagination. Memory has always a reference to the past, while imagination is free. Imagination picks out elements from various groups of memories, and recombines them into totally new wholes. Thus, while memory images must be recognised in reference to a past experience, imagination images are more free. The image of a dog with four legs is a memory image, while that of a dog with eight legs or a man with ten heads is a fancy constructed by the imagination. As Titchner says, " Reference to the past is implicit in the very notion of memory. But imagination is more free : we need not image a past experience, but may put things together ' out of our own heads,' and not as they have ever occurred." Moreover, as pointed out before, memory is identical with the reproductive aspect of imagination, while imagination proper is confined to its constructive aspect.

15. Imagination not Creative but Constructive.

Imagination not a " Creative " Power—But Elaborates and Reconstructs Materials.]—It is wrong to characterise imagination as the " creative " power of mind. As in the material world, the law of conservation of energy holds good, making it impossible for even an atom to be created anew, similarly in the mental world " creation " is out of question. A man born blind can never create visual

images by his imagination; one born deaf can never have auditory images. In fact, the old law that there is nothing in the mind that has not been once in the senses is quite correct. Individuals differ in their power of imagination, and much of this difference is due to a difference in their general experience which ultimately provides materials for imagination. What imagination does is simply to elaborate and reconstruct the materials already obtained. It is a process of knitting up old experiences into new forms. It is thus a *constructive* and not a *creative* process. It involves discrimination and combination. It isolates certain elements from a complex whole, and then re-unites these with parts of other complexes, and in this way constructs an entirely new form. We do not see men walk on their heads, but we can imagine them doing so. We can also imagine sirens, monsters, ghosts, etc.

16. Percept, Image, and Idea.

Images are Revived Percepts — Both Distinguished Further.]—Images are revived percepts. They differ from the latter in three respects. In the first place, images are centrally aroused sensations, while percepts are due to real contact of sense-organs with their appropriate stimuli. We perceive an orange lying on the table, and can imagine it in memory when the orange does not exist there. Secondly, images are less vivid and more faded than percepts. A real orange surely gives us a more vivid impression than the image of an orange. Lastly, images change, shift, and move much more rapidly, and very often in a meaningless way, than their corresponding percepts. Images exist in their own background, and form a link in their own train of thought, and are thus out of harmony with the outside world.

Images distinguished from Ideas.]—We may also distinguish images from ideas. They are closely related but in no way identical. As there can be no perception without sensations, so there can exist no idea without

images of some kind. Again, as Stout has pointed out, "the image is only one constituent of the idea; the other and more important constituent is the meaning which the image conveys." Thus

Idea=Image+Meaning.

Idea always has Meaning.]—An idea has always a meaning. It may be associated with a verbal symbol which serves the purpose of an image, or, as usually happens in the lower stages of thought, it conveys with it an image as well as a meaning.

Image related to Sensuous Content—Idea related to Meaning Aspect.]—Image is therefore more closely related to the "sensuous content" of a thought, which may exist in our mind in the shape of visual or auditory images. When, on the other hand, we do not so much refer to the sensuous content but want to emphasise the meaning aspect of the image, we have an *idea*. Thus the same mental state viewed in its sensory character is an *image*, and in its meaning aspect an *idea*.

Children live in a world of imagination and play. When a girl dresses her doll, she treats it as a real baby, and talks to it and offers it food to eat. A wooden horse serves as a real horse, and a little boy rides on it with a whip in hand, and little pebbles are treated as boys and girls belonging to different parties.

CHAPTER IX

INSTINCT

1. Nature of Instinct.

Instincts are Innate Tendencies—Not Acquired through Experience.]—When we look to the active side of our mental life, we find three main types of behaviour: Reflex, Instinct, and Intelligence. We shall speak of these types at some length in the sequel. Here we are to deal with the second type alone, viz. instinctive behaviour, which covers our innate tendencies, *i.e.* those actions which we do not learn through experience. When a baby is born, and his lips touch the mother's breasts, he at once begins to suck the milk. These sucking movements are instinctive. Birds build their nests like clever artisans. Nest-building is instinctive. It is by instinct that a dog runs after a cat, and a cat runs after the mouse. The very sight of the stimulus evokes an instinctive response. This is due to certain "open connexions between the sensory and the motor neurons." Stout * defines instinct as a bodily action or mental process, not acquired through experience, but arising from our inborn constitution, bodily or mental, or both. In short, instinct is "any native tendency to reaction." †

2. Instinct and Reflex Action.

Instinct a Series of Reflexes—Instinct and Reflexes Distinguished.]—A series of reflex activities, which are

* Stout, *op. cit.* p. 334.

† This is the simplest definition, given by McDougall.

connected through inherited structure, constitute instinct. In other words, reflex action is a single response, while instinct is a series of reflexes, where one leads to the next. For instance, sneezing or winking is a reflex, while walking or nest-building is an instinct. In walking, each step is a reflex, and serves as a stimulus to the next step: the series of these reflexes constitutes the instinct of walking. The connexion of one response to the following depends upon inherited structure. It is not necessary that the series of reflexes must be of the same kind. They may be quite different kinds of activities connected together into a complicated series. For instance, a new-born babe sucks its mother's milk. Sucking by itself may be viewed as a simple reflex. But the whole process is an instinct. The baby bends toward the breast when hungry. Then it searches the nipple by a quick movement of the lip, then it grasps it with its lips, then comes the actual sucking reflex, followed by the swallowing reflex. The whole series of these reflexes constitutes the sucking instinct. The child did not learn these movements, but they are innate tendencies within, depending upon inherited structure.

Höffding's Distinction.]—We have already described reflex action as the process by which a sensory impulse directly passes into a motor response without the intervention of consciousness. Reflex action is a purely unconscious action,* while consciousness is not entirely absent from instinct. Thus, says Höffding, "instinct is more complex, more active, and more conscious than reflex movement. . . . Stimulus is required to set instinct to work, but the action is determined far more by the motor tendencies implanted in the individual than by the nature of the stimulus." † Further, he writes, "instinct is distinguished from mere reflex movement by the fact

* For a detailed study of Reflex Action, see next chapter. There we have also spoken of "Conscious Reflexes."

† Höffding, *op. cit.* p. 312.

that it includes an obscure impulse of feeling, consequently a sort of consciousness, though not consciousness of the actual end of the action." *

Instinct is an Inherited Co-ordination of Reflexes.]—Thus, instinct may be spoken of as "an inherited co-ordination of reflexes." The bird builds its nest instinctively. This instinct of nest-building is an inherited co-ordination of many reflexes, such as picking up a straw, flying, laying down the straw, returning to pick it up again, piling up a number of straws, turning them over, and building them into a nest. Throw a new-born pup, about ten days old, into a pond, and it will swim. Thus swimming is instinctive with animals. But human beings cannot swim without learning to. It is, therefore, not a human instinct, but merely a habit. Hockey playing, tennis playing, typewriting, racing, etc., are not instincts but habits. But the pecking of chicks, the singing of birds, the killing of mice by cats, the web-spinning of a spider—all these are instincts. Every instinct is an innate or untaught ability.

3. Instinct and Habit.

Instinct is Inherited—But Habit is acquired by Experience.]—Instinctive behaviour, as we have seen, is inherited, while habit is acquired. Instinct belongs to a species, and is transmitted to the individual through inherited structures, while habit is always acquired by individuals through experience. For instance, hoarding is an instinct; smoking is a habit. Thus, while instinct is an inherited co-ordination of reflexes, habit is an acquired co-ordination of reflexes.†

4. Instinct and Intelligence.

Relation of Instinct and Intelligence—Popular View—James' View—Both partly True—Man has few "Pure"

* *Ibid.* p. 91.

† Cf. Hunter, *op. cit.* p. 192.

but many "Modified" Instincts.]—It is usual to speak of instinct as if it is radically opposed to intelligence or reason. Thus, the popular notion is that instinct is the primary sphere of animal behaviour, while man has very few instincts, but acts with his intelligence, whereby his behaviour becomes adaptive and variable. James, however, has pointed out that it is erroneous to believe that in man there are only a few instincts. Suffice it to say that both views possess partial truth. In man there are few *pure* instincts, but a large variety of *modified* instincts. Thus, keeping in view pure instincts alone, the popular notion that man has few instincts is correct. Modified instincts are neither true instincts nor true intelligence. Hence, if we include them as instincts, then, of course, the human adult has a large variety of instincts, otherwise not.

5. Human Instincts.

Human Behaviour Modified by Experience.]—We possess very few *pure* instincts, because our behaviour is to a large extent controlled and modified by our experience. As we live in society, we feel it necessary to suppress several of our instincts. What we usually have are modified instincts and instinctive tendencies. Warren writes: "Modified instincts include the partly inhibited expressions of anger, fear, and the like; also partly trained activities, such as walking, feeding, parental and sexual instincts, expression of sorrow and delight. In all such cases the instinctive mechanism is a fundamental feature; but individual experience, especially the social example of our fellow-men, leads to radical changes in the form of behaviour." * Instinctive tendency comprises a number of actions, which are separately learned, but the general type to which they conform is not learned, *e.g.* play, imitation, curiosity, etc.

* Warren, *op. cit.* p. 104.

Instincts Classified into Individual, Racial, and Social.]—We may divide instincts into three general classes: *individual, racial,* and *social.** Individual instincts aim at the preservation of the individual, racial instincts that of the race, and social that of the society. Fear, rage, and love are the chief instincts, which have been discovered by Watson's recent experiments, to be the primary forms of unlearned behaviour in human infants. These are included among individual instincts, along with the general instincts of nourishment and protection, and those of hoarding money and valuables, rivalry, hunting, etc. Racial instincts include such as nest-building, egg-laying, parental instincts, etc. Social instincts include such as those of bashfulness, modesty, nervousness, sympathy, self-sacrifice, etc.

Or, Nutritive, Reproductive, Defensive, Aggressive, and Social.]—Another classification is to divide instincts into five groups: nutritive, reproductive, defensive, aggressive, and social. McDougall classifies instincts of human adults as follows: (1) Instinctive fears, *e.g.* of darkness and silence, and of certain sounds and sights; (2) Instinctive repulsion, with its characteristic emotion of disgust, *e.g.* shrinking from slimy creatures; (3) Instinct of pugnacity with its emotion of anger; (4) Instinct of self-abasement, self-assertion, or self-display, with the emotions of subjection and elation; (5) Parental instinct and the tender emotions; (6) The sexual instinct; (7) Gregarious instinct connected with social relations; (8) The acquisitive instinct.

6. Blindness of Instinct.

Are Instincts "Blind"?—Yes, of "Remote" Consequences only.]—Instincts are popularly described as "blind" actions. In a very general sense it is no doubt true, inasmuch as the consciousness of the actual ends does

* Cf. Pillsbury, *op. cit.* p. 273.

not exist, and instinct leads to unforeseen results. But in this sense of having unforeseen consequences, as Stout says, all actions of men or animals are partially blind. But while some ends may not be anticipated, others might be. In instinct, such as nest-building, the bird may be conscious of proximate ends, like the laying of eggs, etc., though it may not anticipate *remote* consequences. It is in the latter sense that an instinct is blind. There may be a very vague awareness of results in the very beginning, but the remote results of instinct are not foreseen, hence instinct is blind.

CHAPTER X

EMOTION

1. Nature of Emotion.

Conscious Side of Instinct is Emotion: a Complex of Bodily and Conscious States.]—Emotion may be viewed as the conscious side of instinct.* It is the consciousness which accompanies our instinctive response. It is a complex of bodily and conscious states. It is characterised by a vivid feeling-tone accompanied by organic sensations and muscular activity.

Emotion of Fear Analysed.]—Suppose you are witnessing a variety show in a music-hall. All of a sudden, by a short-circuit of the electric current, fire breaks out, and in a few moments it envelops almost all exits. The audience dash along in wild excitement and consternation towards the doors and windows; some manage to escape before the flames spread over that side, while some cannot reach the spot owing to confusion. Suppose you, along with many others, including women and children, are left there, and find all ways of escape absolutely barred. You take wild leaps here and there, give a hard knock at the blocked exits, shout in helplessness and perspire profusely. Your heart beats very fast, your throat is choked, you tremble in excitement, your mouth and eyes are wide open, and you behave like a mad man. At a later stage,

* This is how Schneider, Dewey, and McDougall define Emotion: *vide* Pillsbury, *op. cit.* p. 305 ff.; Warren, *op. cit.* p. 294.

after great muscular shivering and exudation of perspiration, you faint. If, however, you are somehow saved, you will describe this experience as that of fear. This is how the emotion of fear is experienced.

Emotion is not mere Passive Feeling, but Active Feeling-Attitude.]—This or any other analysis of emotion will reveal the fact that it is a complex state of consciousness, in which organic reaction predominates. It is this organic reaction which is the expression of emotion and thus makes it in part an active experience, and thus distinguishes it from pure feeling of pleasure and pain, which is a simple and passive experience. Emotion is, therefore, feeling-attitude, and not mere feeling.

Höffding's Definition.]—Höffding speaks of emotion as "a sudden boiling up of feeling, which for a time overwhelms the mind and prevents the free and natural combination of the cognitive elements." *

Emotion Characterised—Arises Abruptly.]—The principal characteristics of emotion are: *First*, it begins all of a sudden, but dies down slowly. It is "a suddenly initiated consciousness," and, as Kant says, "it takes effect as a flood which bursts its dam . . . it is like a fit of intoxication, which is slept off." † The emotions of fear and anger are, as every one knows, aroused abruptly; but once you are angry, it takes some time for you to feel your normal self again. Similarly, if you are overtaken with fear, the emotion will die down gradually, although it rose up suddenly. When you are in a fit of anger, it is customary for people to offer you a glass of water so that the heat of the passion of revengefulness aroused in you may subside.

Covers Wide Range.]—*Secondly*, emotion covers a wide range.‡ It can exist at any mental level from perception upwards, and not only adults but children as well as

* Höffding, *Outlines of Psychology*, London, p. 282.
† Cf. Höffding, *Outlines of Psychology*, London, p. 283.
‡ Read Stout, *Manual of Psychology*, 1921, p. 405.

animals are subject to it. When a child wants the toy you are holding in your hand, and you refuse to give it to him but tease him over it, the child will become angry. Similarly, if you pinch the tail of your dog repeatedly, it will become angry. If you remove one or two new-born pups from their mother's protection, she will show anger. So also, you are angry if you are insulted, or if your well-formed opinions are contradicted, or if your advice is not carried out. Thus, emotion is widely distributed and can be aroused from different conditions. Its expression will be the same though the conditions causing it may vary. From whatever cause you may be angry your behaviour will be more or less the same: your face will be flushed, your breathing will become rapid, you will clench your fists and teeth, and you will move toward the object in order to strike it.

A Highly Complex Consciousness.]—*Thirdly*, it is a highly complex consciousness. It is not aroused by the perception of a mere object, but of a total situation in which the object appears. As Stout says: "it is a general kind of situation, not a specific class of objects, which excites a certain kind of emotion." A lion closed up in a cage does not excite the emotion of fear, while in a jungle, even its distant roar will arouse the emotion. A chained bear and a bear let loose make immense difference. In the former case, I merely perceive an object called "bear," but in the latter case the stimulus is not the mere object but a general predicament or a total situation created by the bear being loose, and thereby arousing the emotion of fear.

Pleasant or Unpleasant.]—*Fourthly*, its hedonic tone is always either pleasant or unpleasant. There is no such thing as a neutral emotion. Both the sensation of the presence of a lion and the organic reaction aroused thereby are definitely pleasurable or painful. The hedonic tone of fear and anger is unpleasant, while that of love is pleasant.

Accompanied by Bodily Reaction.]—*Fifthly*, emotion as feeling is always accompanied by an organic reaction, which forms an important part of the total state of consciousness. Emotion and its expression usually go together, so that it is difficult to understand what the emotion of anger will be without the clenching of fists, teeth, etc. In the case of intense emotions it is true beyond doubt. The fact is so important as to have been made the basis of a new theory, associated with the names of James and Lange, which we shall discuss in the appendix.

2. Emotion distinguished from Instinct.

Relation of Emotion and Instinct—Emotions based on Instincts.]—We have said above that emotion is defined by some psychologists as "the conscious side of instinct." This at once brings out an intimate relation between emotion and instinct. As McDougall says, "Each of the principal instincts conditions some one kind of emotional excitement whose quality is specific or peculiar to it." * For instance, wonder is an emotion, and its corresponding instinct is curiosity; so also, fear (emotion) and flight (instinct), shame (emotion) and covering (instinct), wonder (emotion) and curiosity (instinct). Thus, every emotion is based on an instinct. The organic reaction in emotion is due to instinct. Even the same process can be looked upon as emotion or instinct from different sides. Fear can be viewed as emotion as well as instinct. Pillsbury observes: "Instinct is the process viewed from the outside, emotion is the same process viewed from within. Every emotion has its instinctive side, every instinct its emotional side." †

Fear as Emotion—Fear as Instinct.]—Fear, viewed as emotion, would imply certain muscular contractions,

* Cf. McDougall, *Introduction to Social Psychology*, 1908, p. 46; also *Physiological Psychology*, 1905, p. 108.

† Pillsbury, *op. cit.* p. 305.

causing trembling, shrinking, etc., only as far as they are confined to the body of the man in fear. Fear, as instinct, would imply certain movements outside the man's body, which becomes therefore the impulse of flight. Similarly, so long as I am clenching my teeth, I am angry (emotion), but when I actually strike, anger ceases as emotion and turns into the impulse of fighting.

3. Classification of Emotions.

Emotions as Simple and Complex.]—Emotions may be considered under two general heads, simple and complex. The simple and primitive emotions are the three fundamental emotions of fear, anger, and love. All other emotions can be resolved into these simple emotions, and are called complex, secondary, or derived, *e.g.* scorn, remorse, pity, gratitude, etc.

Primary Emotions.]—The primary emotions have their hedonic tones. Fear and anger are unpleasant, but love is pleasant. They also differ in intensity. For instance, fear is different from disgust, anger from rage, joy from love.

Fear—Darwin's Analysis.]—Fear is associated with some definite muscular contractions, which cause trembling, raising of the eyebrows, opening of the mouth, crouching, etc. It is aroused by a stimulus which means an overwhelming threat in particular, and by general stimuli such as solitude, strange noises, darkness, new environments, etc. The frightened man, says Darwin, at first stands like a statue, motionless and breathless, or crouches down as if instinctively to escape observation. The heart beats quickly and violently, so that it palpitates and knocks against the ribs. The skin becomes pale. Perspiration exudes profusely from the skin, though its surface is cold. The hairs stand erect, muscles shiver, the mouth is dried up, lips tremble, the breathing becomes hurried, voice becomes husky. As fear develops into terror, the heart beats wildly, faintness ensues, the

breathing is laboured, a death-like pallor spreads over the whole body, the nostrils and the pupils of the eyes are dilated, and the eyeballs become motionless and fixed on the object of terror.*

Anger—Its three Stages—Its Symptoms.]—Anger has also an unpleasant hedonic tone, though not so marked as in fear. While fear is passive, anger is active. A young child, in an outburst of anger, goes on kicking and struggling at first, and then he begins to throw away his toys or anything you place in his hands, he smashes up anything near him and kicks and strikes the man who arouses his anger. Even adults behave more or less similarly in smashing up the pieces of furniture and throwing away anything near them they can get hold of. This destructive impulse is a very prominent expression of anger. When we cannot vent ourselves on the man who has provoked us, we usually shower our vengeance on innocent persons or inoffensive things. We speak very violently to those to whom otherwise we would be respectful. In many cases when anger has calmed down, the man realises the offence he gave to innocent persons and apologises for his behaviour in a fit of anger. Ribot tells us that anger passes through three stages—the animal attack, aggression, and resentment. Spencer describes the symptoms of anger in the animals as follows: "The destructive passion is shown in a general tension of the muscular system, in gnashing of teeth and protrusion of claws, in dilated eyes and nostrils, in growls; and these are weaker forms of the actions that accompany the killing of prey." When anger becomes more intense and violent, it is called rage. Anger is based on the instinct of fighting.

Love as Tender Emotion.]—The third type of primitive emotion is love, by which we imply the tender emotion. Its feeling-tone is pleasantness. The tender emotion is very like the parental feeling. It is a pleasurable experience, springing from somewhere above the heart and the

* Cf. Darwin, *Origin of the Emotions*, New York, p. 292.

region of the lungs, owing to a more rapid circulation of blood. "Its physical accompaniment is contact or the embrace. It is in this form that it occurs in very small children, and it is this form which is essentially maintained throughout life, although it may become abbreviated to a mere friendly slap on the back." * It is a social emotion, and is aroused out of sympathy or gratitude.

Secondary Emotions.]—The secondary emotions involve as their constituents the primary emotions in some form or other. For instance, the emotion of scorn is aroused by an object which excites our disgust and anger at the same time.

McDougall's Classification.]—A very thoroughgoing analysis of secondary or complex emotions has been made by McDougall. He has also been able to connect each emotion with its corresponding instinctive basis. He divides human emotions into six groups: (1) Expressive (or Nutritive), (2) Reproductive, (3) Defensive, (4) Aggressive, (5) Social, and (6) With temporal projection.†

4. Mood and Passion.

Emotion and Mood Distinguished—Mood may last Long Time—Emotion and Passion Distinguished—Passion as Intense Emotion, but of Shorter Duration—Mood tends to Persist, e.g. *An Irritable Mood.*]—It is difficult to draw a line of demarcation between emotion and mood. Mood is an emotion of longer duration and lesser intensity. When a weak emotion persists for some time, it is a mood. A mood may last for hours and days together. But the more intense emotion, which lasts for a short while, is called passion. "Feeling begins as emotion, and passes—if it finds sufficient food—into passion." ‡ Thus, anger is an emotion. It is felt in relation to some definite situation. We are always angry about something. But anger may

* Cf. Hunter, *op. cit.* p. 208.
† For a complete list cf. Warren, *op. cit.* p. 299.
‡ Höffding, *op. cit.* p. 283.

leave an after-effect, the mood of irritation, which is not aroused by anything in particular, is weaker in intensity, but lasts for a longer time, and tends to vent itself on any object that comes in its way, and thereby arouses a number of emotions. "The occurrence of a definite emotion," says Stout, "tends to leave behind it an emotional mood akin to it." * When we are irritable, we are angry even with our friends if they meet us then, or with anything whatever that comes in our way. We worry over the most trifling things, which otherwise we should take no notice of. On the other hand, the emotion of anger may lead to the passion of rage or fury, which is a much more intense form of anger, and which exhausts the organism in a short time. As Titchner points out, "we speak of a passionate grief, a passionate love, a passion of terror, when we wish to indicate a high degree of emotive intensity." † Thus, mood is a relatively permanent emotion, while passion is a stronger emotion of a shorter duration than mood. A mood, once aroused, tends to persist or last for some time, maybe for days together. It always tends to "fasten" upon any object presented to it. If owing to sleeplessness, indigestion or any other cause, a man gets up in the morning in a bad temper, any little thing will upset him, as he is in an irritable mood. These very things will be welcome to him when he is in a cheerful mood, which arises out of the emotion of joy. Similarly, the emotion of sorrow brings about a gloomy mood, and he may feel depression for hours and days together, and nothing otherwise agreeable will be welcome to him: the whole world will assume an appearance of gloominess.

Mood as Tendency to Emotion—Passion as Abiding Interest—Emotion and Passion distinguished by Kant.]—There is also another sense in which the terms "mood" and "passion" are used. A mood is viewed not as an emotion itself, but as a predisposition or tendency to an emotion. Such predispositions might be aroused by good

* *Op. cit.* p. 407. † *Op. cit.* p. 497.

or bad news, by good fortune or misfortune. Passion also means an abiding interest: "the movement of feeling becomes second nature." In this sense, Kant observes: "Emotion takes effect as a flood which bursts its dam; passion as a stream which wears for itself an ever-deepening channel . . . emotion is like a fit of intoxication which is slept off; passion as a madness, brooding over one idea, which sinks in ever deeper." * Thus we have a passion for history, languages, art, success, gambling, hockey, etc. It means any interest which is specific and abiding.

5. Temperament.

Temperament is a Permanent Mood—Leads to Difference of Standpoints.]—Compared to a mood, which after all is a transitory disposition, temperament may be defined as a permanent mood. It is an innate tendency, and does not undergo much modification in the individual's life. It is a permanent disposition, in which the emotional element is the strongest, and which greatly contributes towards one's angle of vision. Temperament contributes to "the very warp and woof" of character. For instance, even though the same educational facilities and training may be given to students from England, France, and India, their standpoints will differ, because of their innate tendencies (intellectual, volitional, and predominantly emotional) which go by the name of temperament, and which enter to a great extent in the formation of character.

Classification of Temperament: (1) *Choleric,* (2) *Melancholic,* (3) *Sanguine,* (4) *Phlegmatic.*]—The older psychology based the classification of temperament on the conception of internal secretion and distinguished the choleric, melancholic, sanguine, and phlegmatic. This classification has not been abandoned even now. Wundt has modified it to imply quickness or slowness of the individual connected perhaps with the action of the heart. The choleric

* Quoted after Höffding, *op. cit.* p. 283.

temperament represents strength, alertness, and rapidity, as well as a predisposition to anger; the melancholic individual is slow and depressed, predisposed to grief, and appearing strong in character; the sanguine individual is quick but weak, and has a hopeful and pleasant outlook; and the phlegmatic is slow but persistent and calm. The study of temperament is a study of individual differences.

6. Sentiment.

Sentiment is a Relatively Permanent Disposition—Its Different Expressions—Sentiment is Permanent, while its Emotions Vary.]—In popular phraseology, a sentiment implies a mild emotion, and in particular a sickly and shallow type of the tender emotion. But it is now used in a technical sense,* and signifies the relatively permanent disposition, in which ideation (knowledge, memory, etc.) plays an important part. As Mellone † says, emotion is "the feeling at the time it is felt," while sentiment is "the disposition out of which it arises." The simpler forms of sentiment produce only one kind of emotion; in its more developed form the same sentiment can produce many kinds of emotion. Sentiment is "a psychological disposition towards a certain object. It shows itself in different ways according to the relations into which that object may enter. Hence (*a*) it cannot be all felt at once, (*b*) it requires the development of ideation. The sentiment is, thus, the permanent condition of its varying emotions." ‡ Such permanent dispositions are, for instance, love, hate, friendship, beauty, harmony, home-sentiment, etc.

* For the technical sense consult Hunter, *ibid.* p. 213; Angell, *op. cit.* p. 392; and for a detailed distinction between *emotion* and *sentiment*, cf. Stout, *op. cit.* pp. 699 ff.

† Cf. Mellone, *op. cit.* p. 217.

‡ Cf. also Shand: "Sentiments are 'the relatively stable centres' to which emotions attach themselves. They are the complex whole which contain in their possible life-history the entire gamut of the emotions" (see Stout, *op. cit.* p. 700).

Sentiment as an Organised System of Emotions according to Shand.]—According to Shand, sentiment means an organised system of emotions centred upon certain objects. When I perceive a work of art, like a picture, the perception suggests the sentiment of beauty by calling forth various emotions organised in a system. Trains of ideas are aroused, and the mental state is transformed into a complex of an idea of value and feeling, and thus I am said to appreciate the work of art.

Sentiment as a Complex Emotional Disposition.]—Sentiment is therefore "a complex emotional disposition which manifests itself variously under varying conditions (emotions)." *

7. Types of Sentiment.

Sentiments as Concrete and Abstract—Abstract Sentiments are Intellectual, Moral, Æsthetic, and Religious.]—Sentiments are either concrete or abstract. Concrete sentiments include those of love, hate, enmity, reverence, honour, patriotism, etc. Abstract sentiments are the intellectual, moral, æsthetic, and religious. Intellectual sentiments are principally those of *belief*, *disbelief*, and *doubt*. Moral sentiments arise from our perception of moral acts, especially of others, and are also called social sentiments. They include shame, pride, guilt, innocence, trust, distrust, envy, compassion, forgiveness, revenge. We like certain acts, dislike others. "This feeling is combined with the idea of social value and becomes a moral sentiment." When we evaluate actions of others, we have the sentiments of *right* and *wrong*, and when we evaluate their conduct as a whole, we have the sentiments of *good* or *bad*. Æsthetic sentiments are those of *beauty*, *ugliness*, or *discord*. In them the feeling-tone is very pronounced, not so much the idea. Religious sentiments include experiences of awe, reverence, humility, faith, remorse.

* Cf. Stout, *ibid.* p. 701.

Dynamic—Sublime.]—Two additional types may be mentioned: the *dynamic* and the *sublime.* Dynamic sentiments * result from an intense feeling coupled with the idea of power. They include our sense of power, opposition, and the inevitable. The combination of dynamic and æsthetic sentiments gives rise to the sentiment of the sublime.

8. Function of Emotions.

Emotions have an Important Function—Infuse Warmth and Force into our Life—Suppression of Emotions—Value of Self-control.]—Without emotions our life would be cold and dull. Emotions infuse warmth and force into our life and make it interesting. Mental life devoid of emotions would be "coldly intellectual." A free expression cannot be given to all emotions. Society expects us to control our emotions within limits in the interest of social discipline, decorum, and decency. Emotions can be suppressed, but in many such cases it leads to nervous disorders.† Beneficial emotions can be tolerated by society, but not those which are harmful to the social environment. Warren writes: "Emotion, if uncontrolled, hampers the proper interrelation between the individual of to-day and the environment of to-day." Self-control is indeed a great virtue, whose value can hardly be overestimated.

* Cf. Warren, *op. cit.* p. 305.

† For further information on the subject study Freud's experimental investigation.

CHAPTER XI

THOUGHT AND LANGUAGE

1. Thought and Language as Mental Activities.

Thought and Language closely related as Mental Activities—Both as Social Products.]—We now come to the consideration of thought and language as peculiar modes of mental activities. We are not called upon to deal with any system of thought or thoughts, or with any system of language, whether constituted by gestures, speech, or writing. Our thinking process is closely related to language as a mental activity. Both have symbolic components, and both arise from the need of a social intercourse, which applies more to language and less to thought. Then, again, both as a rule develop together. The development of thought is greatly aided by language, and vice versa.* "Increased definiteness of thought leads to more definite expression in language, while a new verbal symbol is apt to make for greater precision of thought." † Thought may be viewed as language without communicative expression, and language as thought with communicative expression. Language is wholly a social product, and could not have arisen unless men lived together and felt the need of expression through some kind of signs and symbols. Thought is less social in

* *Vide* Warren, *op. cit.* p. 314.

† Cf. "While it is possible for thought to begin without language, just as arts may begin without tools, yet language enables us to carry the same process enormously farther" (Ward).

origin, since the thinking activity can proceed without any reference to others, but it cannot develop beyond a very imperfect stage without language, hence both thought and language can be viewed as social products.*

Before proceeding to analyse these mental activities, it will be instructive to institute a comparison between man and brute.

2. Man and Brute.

Animals as Machines—Opposite View.]—There are two extreme views on the intellectual relation of man and brute. One looks upon animals as mere automata or machines, having no soul, and being merely a bundle of instincts and reflexes. The other view gives them thought as well as language, fairly well developed. But the fact is that animals are neither mere machines nor approach human rationality. Man is said to be a rational animal. This is true enough, but it does not imply a complete absence of thought on the part of animals. What type of thinking are they capable of and how far can they be said to possess and exercise intelligence? This is the main question at issue, and its answer is likely to throw light on the problem of thought and language.

Meaning of "Thought"—Animals not capable of Conceptual Thought.]—The word "thought" is fluid enough to be applied to the lowest as well as to the highest modes of consciousness. We shall restrict its use to the higher forms of thinking and reasoning, the types of mental activity that are not possible without concepts and association by similarity, and which therefore necessarily involve discrimination, comparison, and abstraction. We shall show, by typical concrete examples that the animal

* "The higher development of the individual is only possible through intercourse with other individuals, *i.e.* through society. Without language we should be mutually exclusive and impenetrable, like so many physical atoms; with it each several mind may transcend its own limits and share the minds of others" (Ward's article on "Psychology" in *Encyclopædia Britannica*, 9th edn.).

is not capable of this higher kind of abstract, analytic and conceptional thought, and that language as a medium of organised expression presupposes the existence of such conceptional thinking.

Experiment on Dogs—Merely Accidental Experiences Linked Up—Intelligence of Higher Animals—Inability to Deal with New Situations.]—Experimenting on the behaviour of higher animals, like the dog, it has been found that although some very intelligent dogs might lead us to suppose that they are not merely slaves of a cut-and-dried routine of thought but have the power of making inferences and acting in novel and unforeseen ways, yet on careful thought we can easily explain all their behaviour as the linking up of merely accidental experiences. That higher animals do possess sufficient intelligence goes beyond question. For instance, your dog can easily find out when you hit him in anger and when you kick him accidentally. When a dog barks at a stranger, you can easily make him stop barking by a mere ejaculation of some familiar word. The dog can also perceive whether you are irritable or in good spirits. There are some intelligent dogs which can find out from the hat and the stick in the hall whether their master is at home or gone out. If you leave your coat or handbag by your dog, if it is intelligent it will keep a vigorous watch and will not let any one touch the property. All that goes to make a strong case for a highly developed intelligence on the part of the higher brutes. Still, the fact remains that even the most intelligent dog cannot deal with novel data and new situations out of the cut-and-dried routine it is accustomed to, even as any man except the idiot can.

Can Animals Reason?]—Dogs usually bark at people after dark. Does it mean that they have reason, and can infer from the coming of a man at night that he was about to attack their master or remove his property? It can hardly be supposed that dogs can reason. The fact in question can be explained on the supposition of a number

of stimuli creating an impulsive response on the part of the dog.

Story of a Dog.]—James narrates a very interesting story of an intelligent dog, which brings out the fundamental difference between the brute-mind and the human mind. He says:

"A friend of the writer gave as a proof of the almost human intelligence of his dog that he took him one day down to his boat on the shore, but found the boat full of dirt and water. He remembered that the sponge was up at the house, a third of a mile distant; but disliking to go back himself, he made various gestures of wiping out the boat and so forth, saying to his terrier, 'Sponge, sponge; go fetch the sponge.' But he had little expectation of a result, since the dog had never received the slightest training with the boat or the sponge. Nevertheless, off he trotted to the house, and to his owner's great surprise and admiration, brought the sponge in his jaws. Sagacious as this was, it required nothing but ordinary contiguous association of ideas. The terrier was only exceptional in the minuteness of his spontaneous observation. Most terriers would have taken no interest in the boat-cleaning operation, nor noticed what the sponge was for. This terrier, in having picked those details out of the crude mass of his boat experience distinctly enough to be reminded of them, was truly enough ahead of his peers on the line which leads to human reason. It might fairly have been called so if, unable to find the sponge at the house, he had brought back a dipper or a mop instead. Such a substitution would have shown that embedded in the very different appearances of these articles, he had been able to discriminate the identical partial attribute of capacity to take up water and had reflected, 'For the present purpose they are identical.' This which the dog did not do, any man but the stupidest could not fail to do." *

Animals cannot break across Unfamiliar Situations.]—This brings out clearly the fact that the brute mind is unable to analyse a totality of ideas. One complete thought suggests another. When put in a novel situation the animal fails, while man does not. Thus, the animal mind lacks the power of abstraction, and works through mere "recepts" and not "concepts." In conceptual thought, in the power of abstraction and discrimination,

* James, *Principles of Psychology*, Macmillan, 1901, vol. ii, p. 349.

in imagination, in breaking across unfamiliar situations—in reasoning—lies the superiority of man over the brute.

Man as "Talking Animal"—Language a Conceptual System.]—Man is also called "the talking animal." This means that he has the use of language for the expression of his ideas. Animals, too, express their wants or emotions by means of certain sounds or other symbols. But how far such sounds can be said to constitute language is open to controversy. To be sure, these sound expressions remain undeveloped for the most part, and can hardly be termed "language" in the strict sense. Animals may be gregarious but they are not "social," and language is principally a social product, being the great vehicle by which members of a society are able to express their thoughts to one another. Language is a conceptual system, and its import will be clear after we have discussed the meaning and function of the concept. Before doing that, however, we might speak of the mental states which are primarily involved in the consciousness of relation without which there is no attention, hence no development of the mental life.

3. Discrimination.

Discrimination an Analytic Process—"Fusion" and "Colligation"—The Analytic Aspect of Attention.]—In the chapter on Attention we spoke of the fundamental importance of selection in all conscious activity. It is this selection which effects the process of analysis and synthesis involved in all attention. The synthetic process has already been described under the more common name of Association. The analytic process is known as Discrimination. Both analysis and synthesis are correlates, and involve each other, though logically synthesis is prior to analysis, since two or more qualities, such as colours or sounds, must be united together simultaneously or successively before we can distinguish them. Sensations usually blend together, either losing their individuality ("fusion")

or keeping it up ("colligation"). The blending of the sensations of taste and smell in drinking a cup of tea, or the association of the various microtones of a musical instrument illustrates fusion, while the perception of colours illustrates colligation. Now, this kind of blending goes on by the direct effect of sensory stimuli, and it is here that discrimination comes in to bring home to us that such fusions are not simple but complex states, and that the objective world is an aggregate of complexes. Thus, discrimination consists in analysing qualities or states which are originally fused together. It may be viewed as the analytic aspect of attention.

Process of Discrimination Illustrated.]—Discrimination begins to operate by the change in sensory stimuli. We have *e.g.* first two sensations fused together. Then we have one of them fused with a third, and then the second fused with another, and so on. This process, by producing different reactions, produces the sense of distinguishing the two sensations, and thus we have an awareness of difference. Whether the taste of a cup of tea is really a sensation of taste or smell can be determined by first closing the nostrils and then sipping the tea. We shall find that the sensation of taste will altogether disappear. It was actually the sensation of smell, and was originally fused with that of taste. Thus, as we analyse a compound in chemistry, so we discriminate a fused compound-quality in psychology. As in the first case, we analyse by noting the effect of various agents separately, so in the latter we note the effects of varying the concomitants, and are thus able to discriminate the component qualities of a mental state.

Discrimination, how Facilitated.]—Given two weights: how to find out which is heavier. What we do is to lift them immediately in succession. When the weights have very little actual difference, we may have to repeat the experiment several times in quick succession before detecting which is the heavier. Here the handling of the

two objects in immediate succession has facilitated our discrimination.

4. Comparison.

Abstraction—Comparison—"From the Known to the Unknown"—Fusion of the New with the Old.]—Discrimination involves abstraction and comparison. Abstraction is the drawing out of a quality from its fusion or colligation with other qualities. It plays a very important part in the formation of concepts, which we shall presently discuss. Comparison is the observation of likenesses and differences existing between two qualities or things. If we place two animals like the horse and the donkey before a boy, and ask him to compare them, his mind will busy itself in detecting the various points of agreement and difference as to size, colour, shape, usage, etc. It is a well-established educational maxim that in teaching children we must proceed from the known to the unknown. The knowledge of the unknown must start from some basis previously known, and it is by comparison of the new with the old almost at each step that the learner is able to assimilate new knowledge. The fusion of the new with the old, carried on by comparison, has already been spoken of under Apperception. To borrow Angell's metaphor, "the great tree of knowledge springs from the seed of that vague consciousness within which the infant's life begins. Differentiation followed by fresh synthesis, old experiences blended with new ones, each modifying the other—such is the course of progress." *

5. Meaning.

Consciousness of Meaning—Involves Principles of Recognition.]—One of the fundamental properties of thought is our consciousness of *meaning*. We employ images not for their own sake but for their meaning, *i.e.* for what they stand for. In our concrete mental life a

* Angell, *op. cit.* p. 265.

pure sensation does not exist, simply because it is devoid of meaning. Our actual sensations have always some meaning, hence they are for us perceptions. When we perceive a motor-car passing on the road, it is obvious that we understand the meaning of what we see on the road and call it a motor-car. Meaning essentially involves the principles of recognition. The adjustment and co-ordination of perceptions would be impossible without their meaning. So also in respect of images: memory and imagination would be a mere confusion without our apprehending the meaning of the images employed. In proving a geometrical theorem, *e.g.* that the angles at the base of an isosceles triangle are equal, we draw a certain triangle on the blackboard, but this figure means to us all isosceles triangles irrespective of size or material. In other words, the triangle we have to do with is a typical image symbolising all triangles having two sides equal.

Its Importance and Function.]—Without meaning, neither the elements of our sense experience nor images and ideas can be employed rationally, coherently, and successfully. Meaning constitutes their very essence. These introductory observations will now help us in understanding the nature of conception, which is a higher and a more elaborate form of our consciousness of meaning.

6. Conception.

Symbolic Function of Images and Ideas—Meaning of "Concept" and "Conception"—Concepts are Symbols—Conception Analysed—Concepts enrich our Mental Life.]—The function of images and ideas, as we know, is symbolic. They represent or stand for a certain meaning. When the word "horse" is uttered, we know exactly what is meant. It may mean a particular horse—in that case our mental operation is perception, with its product the percept of the horse we look at. But it may also mean a horse in general, no particular horse but the idea of horse that would be applicable to all particular animals of that species. Such

a general idea, which symbolises the particulars without being identical with any one of them, yet including all of them, is called a concept, and the mental activity which results in concepts is called Conception. Each concept is thus a symbol which means to us a number of objects or relations, without necessarily identifying itself with any particular object or relation. The process known as conception involves abstraction, comparison, and generalisation. We see a number of horses, abstract their attributes, pick out those that are common, and put them together mentally in the form of an abstract universal. The result will be an abstract general idea, a concept, which would symbolise the totality of the class "horse." Similarly, we can form a concept of "dog," "cat," "man," "table," "chair," "colour," "sound," "place," "right," "wrong," etc. Concepts help a great deal in enriching our mental life. Our thought is primarily conceptual. While reading a page of a book or a magazine, we understand the meaning without stopping at each word to recall any verbal or visual image. Conception therefore greatly simplifies our mental life, and its value in its economy cannot be overrated.

Generic Image—Not Identical with Concept.]—Some psychologists bring in the idea of a composite mental picture as the essence of a concept. They say, *e.g.* that while thinking of a book, we recall the image of no one particular book, but a generic image, a kind of "composite mental photograph" of books. It is true that we do actually think of such a vague image many a time, but this "scheme" does not always constitute a concept. The concept is the meaning conveyed by this schematic representation. The bare outline or the composite photograph is certainly more abstract than images of particular objects but more concrete than a concept, which is only a symbolic image. The generic image, therefore, can hardly be identified with the concept, although it approaches very near it.

Knowledge a System of Concepts—Development of Concepts.]—Our knowledge is a system of concepts, governed by general laws. This system is at the basis of all mental development. It is, however, in reasoning, as we shall presently see, that this conceptual system plays a very important part. The development of concepts takes place either by the formation of relatively new concepts or by the modification and growth of old concepts. Every one knows how his concepts of " good " and " evil," " virtue " or " vice " develop along these lines from his early childhood, after he has had some ideas of the old traditional morality. The ideas of " right " and " wrong " that we had in our childhood have been greatly enriched when we are adults, unless our environments have placed us in a complete moral stagnation. As moral ideas evolve in each individual, so ordinary concepts are also enriched and modified with the increase and development of knowledge. Where this does not take place, the man must be abnormal to some extent as will be evident from his behaviour. In his case the concepts have become stagnant and the normal flow of knowledge has practically ceased.

7. Conception and Language.

Identical Function of Conception and Language—Language a Social Product.]—Like conception, language is also a system of symbols having meaning. It is viewed as " an elaborate conceptual system," because conception and language have an identical function. Conception enables us " to make our thoughts the vehicles of definite meanings," and language also performs the same function with the only difference that it *expresses* our thoughts through words, which it employs as significant symbols. A concept is a mental product, which expressed in speech is a word. Words, whether spoken or written, are mere signs to convey ideas. They are only employed to communicate our thoughts to others. If man had no such need of communication, he would remain dumb and would

have had no language. But as it is, man is a social being; his life is that of a member of society; hence he feels the need of conveying his thoughts to others, and so gives them an outward expression in language, which employs words to serve the purpose of concepts to the hearer. Thus, language is a social product, inasmuch as it meets a social demand.

Clearness of Thought and Language—Formation of Concepts.]—Even when we are thinking about something, it is noticed that we employ words silently. The bulk of our thought is certainly carried on through language, although there might be several concepts in our mind which are not, or even cannot be, expressed in language. In many cases, such concepts are either very abstract or very obscure. Generally speaking, a clear and distinct idea finds an easy expression in clear and unambiguous words. Some persons may be lacking in the power of expressing their ideas, but more often a clearness of thought is concomitant with a clearness of expression. Where one's language is obscure, the probability is that one's concepts are also not very definite and clear. "Language is the great conceptual mechanism, and we depend upon it far more than upon any other mental material for conveying our meaning, not only when we commune with others, but also in our own private thinking." * Language employs words, which express not merely general ideas but also individuals; hence we must admit that we have concepts not only of species and classes but also of individuals. We have a concept of "city," as well as of "London" or "Calcutta." We have a concept of "man," and also of "Paul," "Peter," etc. In the formation of concepts, we simply mark off, through abstraction and generalisation, the boundary of one object or class of objects from all others. In thinking of man, we abstract all the common qualities essential to all men, and put them together within a boundary, to distinguish

* Angell, *op. cit.* p. 256.

this concept from the concept of "horse," "bird," etc. The same process applies to the concept of "Paul," inasmuch as Paul is to be distinguished from all other persons. Thus, in a true sense, all our ideas are general, and as an idea must have a meaning, it follows that every idea is really a concept.

Language an Instrument of Conceptual Analysis and Synthesis.]—Language is thus "an instrument of conceptual analysis and synthesis." Stout sums up his observations thus: "As an instrument of thought, language fixes as permanent possessions of the mind the results of conceptual analysis and synthesis so that they may be utilised as occasion demands in subsequent ideal construction. As an instrument of communication it is the means by which an individual prompts and controls processes of conceptual analysis and synthesis in the minds of others. These two functions of language are intimately united and interdependent. It is only in so far as man, by the use of language, signifies his own thoughts to himself, that he is enabled to make others think corresponding thoughts. On the other hand, conceptual thinking could not pass beyond a very rudimentary stage in the absence of such ideal communication between different minds as language alone makes possible. The development of ideal construction is a social affair." *

We need not enter upon the problem of the origin of language. The subject is treated at length in the science of language. We may, however, mention that in addition to the old religious theory, which traces language to its divine origin, we have a number of scientific theories known as the Bow-Wow theory, the Ding-Dong theory, and others. There is general agreement on the view that speech originated in spontaneous emotional expressions. Our vocal utterances are still to some extent emotional expressions.

* Stout, *Groundwork of Psychology*, London, 1919, p. 152.

8. Judgment.

Mere Concept cannot carry on Thought—Judgment means ascribing Meaning to the Given—A Spontaneous Process—The Unit of Thought—A Complete Act of Thought.] —A concept by itself, though a general idea, is not sufficient to carry on our thought. What we actually do in all thinking is to ascribe meaning to the given. Each moment we are understanding the things, events, or relations around us by assimilating them with our old concepts. "This is a table" means that the thing placed before me has been understood by its having been referred to the familiar class of "tables." It has fitted in with my concept of "table." The new is understood in the light of the old, and this makes knowledge a *system*. The process of "ascribing meaning to the given" is called Judgment. This process does not actually require any length of time; in actual thinking, it is done so spontaneously as to show that the assimilation of the old with the new concept was already a complete act and was not the result of an actual synthetic process. This is the justification of taking the judgment as the unit of our concrete thought. When we think, we do so not in separate concepts, one after the other, but in judgments. We do not link up the concept "fire" with the concept of "burning," and then say "fire burns," but the judgment as such is a complete act of thought.

Proposition—Sentence—Concepts Develop through Judgments.]—A judgment, being a purely mental act, is not available for logical treatment unless it is expressed in language, when it is called a Proposition. In grammar it is viewed as a Sentence. The modern method of teaching a foreign language by means of "sentences" instead of bare "words" is based upon the truth that the sentence is the unit of thought which is ultimately justified by the psychology of judgment. From the very beginning of the formation of concepts, we have an implicit judgment,

i.e. "the assertion of a relation between the mental elements." The development of concepts also takes place through judgments. Concepts neither originate nor develop independently of judgments.

Analytic and Synthetic Judgments.]—When we merely analyse a concept, the judgment is called analytic, *e.g.* "water is a fluid." But when we add a new predicate not originally contained in a concept, we synthesise the two concepts and make a synthetic judgment, *e.g.* "water boils at 100° C." In synthetic judgments, which add to our knowledge, we explicitly unite two concepts together, the new with the old. All judgment is "an analytico-synthetic process, in which concepts are employed and elaborated."

9. Reasoning.

Reasoning Combines Judgments for an End in View—It is Purposive Thinking, and Leads to New Judgments.]—The mental operation by which judgments are combined for a definite end in view is called Reasoning. Reasoning solves our problems. If we want to irrigate a desert, we think about the possibilities of providing water by cutting out canals from certain rivers, or sinking wells or adopting other means, whereby our problem of turning the arid land into a fertile soil may be solved. Reasoning is therefore not merely purposive thinking but it leads to new judgments. If I want to cross the Atlantic and proceed from London to New York, I make an inquiry as to the routes open, the sailings of different companies, the cost of passage, the size of the boats, the type of food supplied, the kind of service available on board, the length of the voyage, etc. Then the solution of the problem is taken up by the elaboration of a series of judgments. If I have plenty of time at my disposal, I choose a slow boat, otherwise a fast mail-boat like the *Mauretania*. If cheapness is the chief consideration I book up by a boat of smaller tonnage. In this way, I

weigh in my mind the relative claims of a number of tentative judgments, which are ultimately reduced to a very small number, and thus my problem is solved by the fixing up of a definite course which meets the situation in the best way I can think of. Why we consult others, especially "the wise," when we are confronted with some very acute and knotty problem is because they are believed to have more exact and a greater number of judgments to solve the problem.

Reasoning Solves our Problems—Animals cannot Reason.]—Reasoning enables us to face and solve successfully novel situations. If a dog holding a stick in the middle tries to pass through a fence, it fails, and after a series of unsuccessful attempts hits at the right solution of holding the stick from one end. Obviously the dog did not reason. If it could, it should have foreseen the futility of so many attempts; all these trials would have been unnecessary, and a mental solution should have preceded any actual attempt. In as far as reasoning proper is the elaboration of judgments, it must work in a conceptual system, and so the animals cannot be said to reason. Reasoning is intimately connected with language; the development of language presupposes a developed thought in the form of reasoning.

Reasoning Works through Judgments—Results in Novelty—Distinction from Memory and Imagination.]—Reasoning works through judgments and yields us a *true* solution of a problem. If the solution is not true, the reasoning is false. The true solution is embodied in a *new* judgment. If reasoning did not result in "novelty," it would not be distinguishable from memory, whose results are true without being new. Revival is always of the old. In imagination the result is new but not true. In reasoning, however, it is both new as well as true.

Reasoning Operates through "Similarity."]—The elaboration of judgments takes place through association by similarity, hence this kind of association is of a higher

order than other types, and is a mark of reasoning. We detect the connexions between various judgments and pass on to a new result, on the basis of similarity. Animals can hardly make use of association by similarity.

Syllogism.]—On analysing our reasoning we find that we usually pass from the old to the new judgment either directly or indirectly. When we say "All swans are white," we immediately pass on to another judgment, "Some swans are white." The latter must be true, if the former is true. On the other hand, we may so unite two judgments as to lead to a third and new judgment, *e.g.*

All metals are heavy.
Gold is a metal.
Therefore, it is heavy.

This system of three judgments is called a syllogism. We do not reason in this formal fashion in all practical reasoning, although on analysis, it can be resolved into a chain of syllogisms.

Deduction and Induction.]—The syllogism is mainly an instrument of verification and proof, and is employed both when we proceed from the general to the particular, and *vice versa*. The former type of reasoning is called deduction, and the latter, viz. the generalisation from the particular, is called induction. The two processes are closely related, neither being complete without the other.

10. Development of Language.

Parallel Development of Thought and Language.]—Thought and language develop *pari passu*. The lower grades of thought can never give rise to a highly developed language. Our conceptions are mostly based on language, our thinking is silent speaking, and thus the highest form of thought, viz. reasoning, must be carried on through a highly developed language. In the animals, reasoning as a conceptual system has not developed, consequently they have also failed to develop a highly organised

language. It may be that at an early stage we might have copied the dog's barking for the expression of emotions and wants, but we have later on developed our language to a high pitch of perfection, while the dog is still busy with his primitive "bow-wow." The animals have doubtless a number of signs which convey to their species a particular meaning, but their activities and responses are more due either to habit or to instinct than to any conceptual thought. Man alone is called "the talking animal," and he has found language as an excellent medium for expressing his thoughts to other members of his species. Man is primarily a social being, which the animal is not; hence language, the social product, has attained to a very high pitch of excellence.

CHAPTER XII

VOLITION

1. Volition Analysed.

Volition=Mind Active.]—By "volition" or "will" is meant the *active* aspect of our mental life. "The whole mind active" is the will. This simple and elementary activity, such as is involved in our craving, longing, desiring, etc., is also sometimes termed *conation.*

Volition Analysed—Action on Purely Perceptual Level —Purposive Activity—Choice—Control of Movement.]—For a general analysis of volition, let us take any familiar instance and find out the elements discernible in it. For instance, when I feel thirsty, I pour out some water in a tumbler and drink it. Then, again, finding that I have no umbrella to protect me from the threatening clouds, I return home quickly; if I am caught in a shower, I seek a conveyance to take me home. On reaching home, I enter my study and after a while begin to write a letter. Suddenly it strikes me that a friend is expected at this very hour. Evidently I forgot about his visit. I stop writing the letter, and in a hurry rush for a taxi and dash off to the station to be there in time. On arriving there, I am told that the train is late by an hour. Shall I wait or shall I return home and come back after an hour, or send some one else in my place? After some thought, I choose to spend the time in the waiting-room and meet my friend on his arrival. Now, these examples embody a

series of activities, from a mere impulsive act to a full-fledged volitional act. I drank water by a mere impulse. My action was totally guided by the general situation. At this purely perceptual level, I do all my habitual actions. Instinctive and reflex acts are also on this lower level. When, however, a desire takes the place of an impulse, we rise above the purely perceptual level—which usually marks the mental life of children, lower animals, and imbeciles—and we think of the purpose of our activity and the means for its realisation. We are able to place before us ideally the object that is anticipated to give us pleasure, and we take steps to attain this end. Sometimes we take a little time in making up our mind as to which of the conflicting impulses will ultimately guide us. Here we exercise choice, and it is at this stage, which is distinctly a late stage of mental development, that voluntary decision properly so-called takes place. Thus, the control of movement seems to be the essential mark of volition or will.

Before tracing the gradual development of control, from the earliest random movements of a new-born babe to the fully-controlled movements of an adult, we shall give a general classification of movements.

2. Classification of Movements.

Kinds of Movements.]—Movements may be conveniently classified on the basis of their accompanying consciousness into (i) Automatic, (ii) Reflex, (iii) Impulsive, and (iv) Voluntary.

Automatic.] — Automatic movements are such as originate from within the body without any external stimulus, *e.g.* respiration, digestion, circulation, etc. These movements are found to exist in the new-born babe as part of his native equipment. Such movements are also called spontaneous. They involve merely muscular movements, and are physiological functions, whose nervous stimuli are within the body. No consciousness is involved

in automatic activities, but if they are upset in any way, we attend to them inasmuch as they cause pain.

Reflex—Physiological and Sensation Reflexes.]—Reflex movements arise from stimuli outside the organism. The earliest reflexes of a child are, for instance, crying, sucking, clasping the fingers, etc. In such movements also consciousness is not involved. Any movement made in direct response to an external stimulus, without involving consciousness, is a reflex movement.* We wink, sneeze, and yawn; but sometimes we do take notice of these movements, and so they do involve consciousness in that case, but all the same they are never produced by consciousness. Those which are entirely independent of consciousness are known as *physiological reflexes;* others of which we are conscious are called *sensation reflexes.* The expansion and contraction of the iris illustrates the first, while sneezing, winking, swallowing, etc., the second.

Instincts.]—These reflex movements are co-ordinations inherited by the child. He does not learn them by experience, but as soon as he is born, they are there. They are his innate equipment. Such inherited co-ordinations of reflexes, which point to congenital pathways in the nervous system, are called instincts or instinctive movements, as has already been shown above.

Random Movements.]—Besides these hereditary reflexes, new-born babes are equipped with a number of other muscular movements, principally of the legs, arms, and face, which they usually make in response to any external stimulus. These are not co-ordinated yet, so any external stimulus leads the baby to move its arms and feet restlessly. Show a rattle; it is impossible at this stage to extend the hand to grasp it, so there will be an excitation of arms and feet. Lay down a baby on the bed and the legs will at once begin to move in great excitement. These are called random movements. At a later stage, these miscellaneous responses are organised, and thus controlled

* Cf. Angell, *op. cit.* pp. 60 ff.

movements appear after the consciousness begins to work actively.

Impulses.]—Impulsive movements or impulses are those that arise from sensation or memory image. A sensation is followed by movement—that constitutes an impulse. We feel a certain want or the inclination to do something, and actually perform the movement. Thus, in impulses their conscious accompaniments exist, while in automatic and reflex movements they do not. Our movements expressing emotions, *e.g.* of anger, grief, joy, etc., are impulses.

Volitional Acts.]—Voluntary or volitional movements, more properly called volitional acts (since they fully involve consciousness), are those in which we are conscious of an end in view, and which we perform after a conflict of impulses. We have already illustrated volitional acts. It is these we have to study now in particular.

3. Development of Movements.

Movements develop Gradually—Elimination of Useless Movements—The Child a Bundle of Reflexes—Control of Larger Muscles—Random Movements Organised into Co-ordinated Movements.]—If the earliest movements are automatic, random and reflex, how do we learn to control them by our will? This takes place very gradually. As animals learn new movement by natural selection or by trial and error, so does the human child. Vague movements meet with accidental success, and useless movements are gradually eliminated. At this stage, there is no expression of volition. The child is a bundle of reflexes. Any stimulus arouses surplus excitation, and its movements are generally well-balanced like those of a machine. The hands move together, and along with them the feet as well. There is absolutely no control at this stage, hence no voluntary action. Such action requires a certain end in view, but the child cannot have any end, because it has yet acquired no experience. After some time the child

begins to look at external objects, though still vacant, and control the movements of the eye. The larger muscles are first brought under control, and then the smaller muscles executing more delicate movements. Gradually the child extends his hand to grasp a rattle, or opens his mouth to swallow the toys. It then begins to learn walking and speaking. Thus movements which were random and unco-ordinated at first are slowly organised into co-ordinated movements made with reference to certain ends in view. This organisation of movements in connexion with consciousness explains the transition of random and spontaneous movements into controlled movements, known as volitional acts.

4. Ideo-Motor Action.

Ideational Control—All Consciousness is Motor.]—In adult life our volitional acts are due to ideational control. I think of my friend's arrival, and at once stop reading or writing and leave for the station. Hundreds of such-like phenomena occur daily in every one's life. What, then, is the explanation of ideational control? How can the mere thought of anything produce a movement, and control it? The simple answer is that all consciousness is motor or conative. It always tends to produce a movement. This is an innate characteristic of consciousness, and must be taken as an established principle. Every idea must produce a certain movement, and the evidence of adult volitional acts lies in the fact that an idea does not produce any and every kind of movement, but a particular idea leads to a particular movement. If that were not so, there would be no sense in co-ordinated and controlled movements. When, however, an idea fails to produce any movement, it does not mean that the above principle that "all ideas are motor" is violated, but only that it has been prevented from producing a movement by the force of some other and stronger idea. The stronger

idea inhibits the weaker, and expresses itself in motor discharge.

Ideo-Motor Action—Movement Directly Follows Idea—Also called Sensorimotor or Psychomotor.]—Now, when you think of a hidden object, you cannot help making movements toward it. Whenever an idea is directly followed by action, it is called ideo-motor action. It is "the sequence of movement upon the mere thought of it, without a special fiat. . . . Whenever a movement *unhesitatingly and immediately* follows upon the idea of it, we have ideo-motor action. We are then aware of nothing between the conception and the execution. We think the act, and it is done." * Ideo-motor action is nothing out of the way in our mental life, but is quite a normal process, typical of our volitional expression. Ideo-motor action is also known as sensorimotor or psychomotor action.

5. Habit in relation to Thought and Action.

No Conscious Control in Routine Acts—Habits are Learnt from Experience.]—Quite a large number of our daily acts occur as a matter of routine, and do not require us to exercise conscious control or supervision over them. We eat, drink, talk, walk, dress, and perform a hundred other activities daily without feeling any strain or effort. These actions are *habits*. When you sit at the table, and your dinner is served, you do not think before helping yourself with spoons and forks. You perform a set of movements without being conscious. You put on a

* *Vide* James, *op. cit.* p. 423. James adds several typical illustrations: "Whilst talking I become conscious of a pin on the floor, or of some dust on my sleeve. Without interrupting the conversation I brush away the dust or pick up the pin. I make no express resolve, but the mere perception of the object and the fleeting notion of the act seem of themselves to bring the latter about. Similarly, I sit at table after dinner and find myself from time to time taking nuts or raisins out of the dish and eating them. My dinner properly is over, and in the heat of the conversation I am hardly aware of what I do; but the perception of the fruit, and the fleeting notion that I may eat it, seem fatally to bring the act about."

collar and button your coat while talking to others, and in this unconscious process no mistake is committed. These actions could easily be mistaken for instincts. But the distinction is clear: habits are learnt and come from experience, while instincts are inherited co-ordinated reflexes.

Habit a Tool of Thinking—Association a Form of Habit.]—Habit is "an indispensable tool of thinking," because thought develops through language, and it is a question of habit as to which language we know and speak. If we know English, and not Latin, the latter's vocabulary will always be without our power, because we never formed the habit of thinking in that language. Our thinking activity is guided by the laws of association. There is always a reason as to why we pass from one thought to another. There are certain ideas which we never think about, since they are not associated with any others familiar to us. Association of ideas is nothing but a form of habit. It has been viewed on the physiological side as "habit of neurones in the cortex." In this sense, all associations are mere habits, and as no thinking can go on without association, it follows that thinking is only possible on the basis of habit. As Pillsbury says: "Habit and association are the two fundamental facts upon which all our activity, mental or physical, depends." * In fact, they are ultimately identical as habits.

Habit Essential to Action.]—Habit is not only essential to thought, but also to behaviour or action. Our volitional activity works through choice of conflicting impulses, and it is habit that not only facilitates choice but also limits it. We never choose to do what has never been done. We generally do that which we are accustomed to do, since it is the path of least resistance. Habit takes away our freedom of choice and acts with an irresistible force.

* *Op. cit.* p. 62.

6. Formation of Habit.

Psychology of Habit—Habit a kind of Organic Memory.]—Habit may be viewed physiologically as well as psychologically. Our nervous system is not merely acted on by external stimulations, but it also possesses the property of storing up modifications. Each thought or each action produces a modification in the nervous system, and when it is repeated, such modification becomes deeper and stronger. These modifications express themselves in the nervous dispositions to follow the path previously dug by its predecessors. As Angell aptly remarks: "If the nervous system were an inanimate mass, we might liken that which occurs to the process by which a path is made across a meadow. The first wayfarer may have selected his special route for any cause whatsoever, and his course may have been devious, like those of the cows which are said to have laid about the streets of Boston. But he has left a mark in the downtrodden grass, which the next person to cross the field is likely to follow. Presently the grass is wholly worn away, and thereafter every one follows the beaten path." * The nervous system, however, is not entirely passive and static; it does not allow all kinds of stimulations to effect it but determines to an extent the kind of channels to be cut into it. Once these channels are cut, they always tend to remain, and by repeated modifications they become deeply ingrained. Thus, viewed as a physiological fact, habit is a kind of organic memory, as the organism always responds in a particular way to a certain stimulation.

Psychology of Habit—Conscious Guidance Dispensed With—Familiar Illustrations.]—Psychologically, habitual actions are those that are originally performed with full conscious guidance, but when they are repeated so as to become easy and automatic in their performance, they dispense with conscious guidance. It is very difficult

* *Op. cit.* p. 70.

to learn initially playing on a musical instrument, but after repeated exertions, when one acquires mastery, it becomes an extremely easy performance, and one can play on the piano without feeling the slightest effort or conscious guidance. One can write a few familiar words while talking with a friend. We can go on walking for miles, while busy in interesting conversation with a friend. If we were to walk alone, and be conscious all the while of our walking, it would be impossible to take a long walk. A typist goes on typing page after page, looking merely at the manuscript. His fingers are so habituated with the keys, that they move automatically, and he only stops if somehow a wrong key is touched.

Characteristics of Habit—Uniform Actions—Easily Performed—Proceed without Conscious Guidance—Leave Mental Dispositions.]—The following are the chief characteristics of habit viewed as a psychological fact: (1) Habits are uniform actions. They are performed in the same way. Involving no consciousness in their performance, they take place with almost the same uniformity as one expects from a machine. (2) They are performed with ease and without any feeling of effort or resistance. They are movements on the path of the least resistance. In the beginning they may be extremely difficult sometimes, but when they become habits, they are performed with much greater ease. (3) They do not involve attention, as they do not require conscious assistance. If, however, we attend to them, we are likely to hinder their smooth working. We habitually swallow many things, but if we attend to the process of swallowing, probably we shall not be able to swallow anything at all. It commonly happens in the case of swallowing pills. (4) Habits, being imbedded in the nervous tissues, leave a mental disposition or tendency towards their own performance, and if you resist this tendency by effort, you will feel a sense of pain or uneasiness. A drunkard may be fully convinced of the evil effects of drinking, but he cannot resist the habit of

drinking a glass of strong liquor daily. So, too, the opium-eater feels the force of his habit to swallow a dose of opium regularly, and if he fails to do that he feels the sense of some want, uneasiness, or drowsiness.

Habits of Early Childhood.]—Perform an action with great attention and accuracy of detail in the beginning, repeat it uniformly, till it is done automatically: this makes a strong habit. The mind should also be plastic and receptive. For that reason, the best period for the formation of habits, good or bad, is early childhood. In old age, the mind having lost its plasticity, it becomes very difficult to form a habit successfully. That explains why the earliest education of a child determines, to a great measure, the type of man he is going to be. Habits made in early years become so deeply rooted as to be altogether impossible to be destroyed in later years.

Importance in Economy of Life.]—Habit is of immense importance in the economy of life. If we were to perform all actions with the same amount of attention always, life would become impossible, and our mind would not be able to advance beyond a very rudimentary stage. "Without habits, consciousness could never get beyond the borders of the inevitable daily routine. With habit, however, it is able to pass from victory to victory, leaving behind in captivity the special co-ordinations it needs." * The efficiency and skill of our performances is greatly due to habit. It enables us to act more quickly and more easily and more efficiently, and it also keeps us fresh and without fatigue. We bathe, wash, dress, walk, eat, drink, and perform so many actions daily without feeling the sense of fatigue and novelty. If we had to devote the same time to them always, all these ordinary actions of our life would tax too heavily on us, and life would become impossible.

Habits are Original Volitional Actions.]—Habits are sometimes called "secondary automatic actions." Originally they are volitional actions, involving full conscious-

* Angell, *op. cit.* p. 76.

ness, but by frequency of repetition they lose their conscious guidance and are reduced to the level of reflex actions.

Social and Ethical Side of Habit.]—Habit has an important social and ethical side. Society demands its members to form good habits in order to secure stability, strength, and efficiency. An individual is practically a bundle of habits, and a society is a sum-total of individuals. The *morale* of a society or a nation depends on the moral habits of the individuals. It is impossible to root out completely a bad habit. We must try to counteract it by a good habit. It is essential, therefore, to inculcate good habits from early childhood, consequently this period of education should be in the best hands, and we should employ the very best teachers in the lowest classes.

7. Deliberation.

Ideational Control Purposive—Organisation of Ends—Conflict of Ends—In Deliberation we compare Alternative Courses of Action—Conflict of Impulses.]—We now return to our analysis of volition. We saw how ideational control was a sure sign of our volitional activity. Such control is always purposive. Further development takes place when we begin to organise the ends in view into a general system or plan of life. Each end is, then, pursued not merely for its own sake, but because of its bearing and connection with other ends. Thus we have a connected series of ends. We dress not simply to protect ourselves from cold but to look decent in society, and it is this sense of decency that helps our choice as to the kind or style of dress we wear. Why do we care for social decency? Because we want to gain a position for ourselves in the social order. A serious-minded student studies philosophy not merely to pass the examination but for his own culture. He prizes real culture more than a university diploma, because he has a love of knowledge and desires to do some original thinking. When several ends are presented to

us, we are called upon to make a choice. Two alternative lines of conduct are open to us: which shall we follow? We may stop our impulse to act precipitately and begin to think out the possible results of each action or the movement involved in each, and weigh the reasons for and against each end in view. The mind thus takes some time to settle the question of the conflict of ends, and ultimately one of the two dominates consciousness, and is chosen as the end. This stage of comparing the ends or alternative courses of action is called Deliberation. It is not a pure volitional act but involves the intellect while comparing the courses of action in view. During the process of deliberation, each impulse pleads for its own side as it were and awaits the final judgment, which ends the process. It is the will that "holds us in suspense" during this time. Sometimes it does not take long to make up our mind either way, but at times it is very perplexing to feel that both alternatives are equally strong. In many such cases the will follows the path of the least resistance, being unable to make a true choice. Sometimes we fight against such temptation and resolve to choose that end which will be our good ultimately.

8. Choice.

Deliberation Ends in Choice—The Agreeable and the Good.]—Deliberation usually ends in choice, unless the will is too weak. We decide upon the course of action to be followed. The end which we choose from this conflict determines the course of our action. Choice mars the highest development of volition. We generally choose that course of action which we consider will be for our good. To most people, the good is no other than the agreeable; but on a higher level of development the will sacrifices the agreeable for the good.

Choice of Profession.]—Young men are confronted with the problem of the choice of a profession. On that depends their future happiness. Their decision is deter-

mined partly by the advice of their parents and friends, their own education and views and ideals of life. It offers a very complicated problem. Ultimately, it is a particular end held up as the ideal that decides for the young man the profession to follow. He deliberates over the comparative advantages and faults of several professions and finally makes a choice, and identifies himself completely with the one chosen.

Strong Will—Weak Will.]—A man is said to have a strong will who is able to control his actions by ideals, surrendering the immediate advantage to remote good; while a weak-willed man is he who acts in response to some immediate impulse, and is unable to take a long view of his own interests. He allows himself to be controlled by momentary impulses and instincts and not by ideals.

9. Attention and Volition : Reaction Time.

No Volition without Attention—Volition is Attention.]—Attention and Will are most intimately related. We saw how attention had a conative aspect, and it is also obvious that there can be no volition without attention. An idea must hold our attention in order that it may control our movements. In the process of deliberation, our attention shifts constantly from one to the other alternative end, and enables us to judge their relative merits. Thinking constantly over any matter means our attending to it, which implies our being interested in it, which further means the probability of our deciding to carry out the idea. "Volition as a strictly mental affair is neither more nor less than a matter of attention." * Volition involves conscious guidance, and therefore attention. We can ideally represent to ourselves the result of a future course of conduct, and attention enables us to carry any of those ideas into action. "Attention must have some-

* Angell, *op. cit.* p. 402.

thing to work upon, and this something is supplied in the form of sensational and ideational presentations. Attention is the function in which mental possibility becomes motor actuality." *

"*Reaction*"—*Reaction Time.*] — An experiment has been devised by which we can measure the relation between attention and control of movements. This is known as the Reaction Experiment. A "reaction" is technically "a movement made in response to a stimulus." In the reaction experiment, we ask an observer to make a certain movement (like raising a finger, or touching an electric button, or any other kind mutually arranged) on perceiving a signal. For instance, we tell him to touch a telegraph key with his finger the moment he observes a flash of light. We employ delicate instruments to measure the interval of time, howsoever small, between the employment of the stimulus and the performance of the movement in response, as previously arranged. This is called the Reaction Time. This time is never constant. It varies according to the direction of our attention, the attitude of the observer, and the nature of instructions given. Reaction time is shortest "when we attend to that part of the total activity which is *least habitual.*"

Origin of Discussion.]—It is said that about 130 years ago, an assistant of the Greenwich Observatory was dismissed because of his habitual error in recording the movement of stars half a minute too late. This gave rise, later on, to a discussion of reaction time among the scientists, and various instruments were invented for recording reaction time accurately.

10. Habit and Character.

Character a Universe of Habits—Man Creator of His Destiny—Habits form Character—Education as Formation of Character—Importance of Habits.]—With the co-ordination

* Angell, *op. cit.* p. 403.

of our impulses are formed habits. These habits of action become fixed tendencies and so definite modes of willing. Character is the name given to a universe of habits. Our habits form our character. And as our life or destiny is coloured and determined by our character, it is man himself who is ultimately the creator of his own destiny. Habits being fixed tendencies imbedded in our organism, it is obvious that the body could be turned into an ally or an enemy, according as we form good or bad habits. In the former case we shall hardly find any cause for regret afterwards, while with bad habits, we may have to put forth herculean effort to eradicate them without meeting with success even then. A man who is good could never think of committing any deeds whereby he may have to be punished either by his fellow-beings or by the State. The stability of his character is a veritable blessing to him, while evil character is a distinct curse to others. Habits both of thought and action go to form character. Character being not merely three-fourths but the whole of man, it is very important to form good habits and thereby accustom the body and mind to the desired modes of action and thought. Education aims at the formation of character. You study your books not merely to master a number of details and speak a variety of languages, but to be able to tread upon the path that will train your will and form your character. You are expected to be good citizens, doing your duty and placing character over everything else. It is your character which stamps your personality. Hence it is of the utmost importance to mould our habits in such a way as to form a healthy will that wills nothing bad or evil. Even if there be some powerful natural and inherited dispositions which stand in our way, we can by a resolute will succeed to a great extent in conquering these by potent self-formed habits, which constitute our character.

CHAPTER XIII

THE SELF AND ITS DISTURBANCES

1. Unity of Consciousness.

Mental States not a Mere Series—The "I."]—We have already said that mental states are not to be conceived as a mere series, without any principle of unification, and that the name Mind is given to the subject of knowledge having modes of consciousness as its object. The question has been repeatedly asked whether or no there is a self beyond the mind, whether there is a permanent entity that corresponds to the notion of "I" in phrases like "I think," "I feel," etc. If this ever-changing mind is itself the Self, then are we to regard the idea of an immutable, changeless, eternal, and indestructible self as a myth? Is it possible to explain the meaning of "personality" or "personal identity" without recognising this Self?

In Psychology Mind Functions as Self.]—The answer is plain. Psychology cannot discuss the nature of that transcendantal Self, hence it must not pronounce any views as to its existence or non-existence. Psychology as a science has its own limitations, within which it can work; and these limitations preclude it from touching upon a problem that is within the province of metaphysics. Hence, in psychology, Mind itself is taken to function as the Self, not as transcendental Self but as empirical Self.

Pure Ego and Empirical Self.]—A very old distinction has come down in philosophy between what Kant called the Pure Ego and the Empirical Self. The *Upanishads*, for instance, devote many chapters to the treatment of

the self, that is eternal, immutable, the ultimate subject of all knowledge, itself unknown and unknowable. Psychology is not qualified to discuss that Self. But there is alongside another and lower self, called the empirical self, which enters into subject-object relation, and which is the basis of our sense of personal identity. It is this which can form the subject of any psychological inquiry. We have adopted the standpoint of identifying this Self with the Mind.

2. Idea of the Self.

Self as Organic Sensations.]—When I say "I feel happy to-day" or "I am ill." the reference is to the organic sensations affecting my body. With a change in these organic sensations, I feel a change of my own identity. A patient suffering from a continuous attack of fever feels himself quite changed. He forms an idea of his self, mainly from the type of organic sensations he has. Along with these, we generally associate our self with our image in the mirror and our nose, forehead, and part of the face through which we always view things. Along with that our idea of the self is based upon social opinion as interpreted by us. We dress, shave, walk, eat in a manner that should appeal favourably to the public, and much of our opinion about our own self is derived from how we read public criticism.

Those things that are my favourites as well as my near relations, are all appropriated within the idea of my self, and so are my clothes, my motor-car, my house, my ornaments, books, etc. A loss of any of these makes me feel as if I suffered a personal loss. Thus, our idea of the Self includes :

(*a*) Organic sensations ;
(*b*) Mirror-image ;
(*c*) Favourite objects of desire ;
(*d*) Relations ;
(*e*) Property, etc.

Development of "the Self."]—The development takes place from the "Me," which appropriates the body, the house, clothes, wife and children, friends, etc., to the "I." The more concrete outer layers are as it were cast off gradually, and the "I" emerges as a mere "personality" having a character and history of its own. Men in a lower sphere of knowledge feel much pain, *e.g.* on losing their clothes, handbag, ornaments, and other belongings, but as they rise higher and higher in enlightenment, they do not lose their head even when their near relations are ailing, or when their property is stolen; even their own body is looked upon as alien, and while feeling pain ordinarily, they can so train themselves with the thought of their self being other than the body, that the real sting of pain does not affect them. Thus the discovery of the self is effected by a process of withdrawal from the circumference, which is indefinite, towards the centre.

Its outer shells.]—If we ask a man, "Who are you?" what answers do we get? He may say, "I am Mr. Williams." But if we further ask him the meaning of "Mr. Williams," he may say that it is the name given to the body standing before me and talking to me. On being asked further, Mr. Williams might say that he is the son of so-and-so, and is working as an insurance broker. But it is obvious that all this does not constitute his self. These are "shells round a nucleus, relative determinations of the nature of the self." Even his ideas and beliefs keep on changing and must therefore be distinguished from the self within him that continues its identity from his early childhood to old age. Thus it is very difficult to distinguish the self from its properties and manifestations; all the same our sense of personality leads us to postulate the real unity of the self, although such unity may not be expressed.*

The child-mind expands itself so as to take in a number of things within the circle of its self, and gradually

* Cf. Windelband, *Introduction to Philosophy*, London, 1924, p. 70.

embraces larger and larger interests. Such expansion is the way of *Pravṛtti*, deeply rooted in our nature. But later on, with intellectual awakening, the opposite path of *Nivṛtti* or withdrawal takes place, though not in the lives of the majority, to whom ignorance is bliss, and who cling to their personal effects with the same tenacity as their body or inner self.

To sum up, the idea of the self centres mostly round our organic sensations, and we represent ourselves as agents or doers rather than merely passive spectators. "The notion of the self in its developed form is that of the continuity of consciousness, of the fact that the different experiences all belong to the same individual, and that the acts of the individual are consistent at all times. . . . The self is society's way of formulating this knowledge." *

3. Types of Personality.

Personality has Various Types.]—Some people are impulsive and fiery, others are placid and calm. Some are thoughtful, some are mystics, and others are men of action. There are ascetics, who find the highest pleasure in withdrawing from the din of the world into calm and quiet places. There are scholars, scientists, saints, merchants, plodders, etc. They express different types of vision and mental attitude. We know of Socrates, Aristotle, Shakespeare, Goethe, Newton, Napoleon, Luther, Bismarck, and others. Each is a typical personality, and forms an interesting study in psychology. The average man is wanting in any one trait developed so excessively, but contains elements common to these personalities but in no way powerful to exercise any potent influence on his personality.

Personality has a Unity of Experience.]—Psychology recognises the fact that each personality has a unity of experience, and that "all the accumulated experiences of

* Pillsbury, *op. cit.* p. 421.

the individual are combined into a single whole through the manifold interconnections of the parts."

4. Disturbances of the Self.

Abnormal Psychology—Mark of Normal Consciousness —Meaning of "Dissociation."]—There are several ways in which the consciousness of the self is disturbed. A discussion of these belongs to abnormal psychology, but we shall only speak of the principal types very briefly. These disturbances include the two opposite poles of illusions, in which we lose hold of the self only for a short while, and insanity in which the self is altogether lost. In all these forms the principal mark of normal consciousness, viz. the consistency of thought and behaviour, is lacking. The term "Dissociation" is now applied to all forms of splitting up or disintegration of consciousness into separate parts, since it implies a want of association, organisation, interconnexion, systematisation—the mark of normal mentality. Dissociations may be sensory (anæsthesia), motor (automatism), or ideational (hallucination).

5. Multiple Personality.

Multiple Personality involves Loss of Memory—Brought on by Sudden Emotional Shock.]—This is one of the most interesting forms of dissociation of the self. It is a functional mental disease and occurs when the connexion between the past accumulated experiences is broken. There is a loss of memory, and a person forgets his past and fails to answer questions about his name, home, whereabouts, etc., and keeps on looking with a vacant mind or uttering meaningless and unconnected words. A sudden emotional shock sometimes dissociates the self. Cases are known in which very poor persons become insane or lose all recollection of their past, on having won a big lottery. This mental disease very much resembles hysteria.

A person's character and ideas change with the loss of memory. A kind and courteous man may then become a very cruel and unkind person, or an originally cheerful and active person may turn into a morose and dull individual. After some time he may all of a sudden return to his former self and his original memories may revive, but he will have no recollection of the happenings during the period of dissociation. Many different characters may thus be assumed by one and the same person, and this phenomenon is known as that of "Multiple Personality."

A Typical Case of Multiple Personality.]—Pillsbury mentions a typical case of a woman, Felida, who was reported to assume a multiple personality, being moody and bad-tempered in one self, but cheerful when the other self came. It is said that these alternating states of her self continued for thirty years. "They would be separated by a period of unconsciousness at times, and at times the change from one to the other would be sudden and with but slight warning. After the change, the immediately preceding events would not be remembered. Later, when Felida had come to know the symptoms of the change, she would write down the things she would need to know in the approaching state. She was a small shopkeeper, and if she felt the change coming in the midst of a sale, she would record the amount of purchase or of the money that she had received that she might continue the transaction without mistake when the new self appeared." * There are several other instances on record, some of which form fascinating stories. An interesting account of a Miss Beauchamp, who revealed four different personalities, is given by Dr. Morton Prince,† whom the author had the pleasure of meeting at Boston, and whose wonderful researches greatly impressed him.

* Pillsbury, *op. cit.* p. 418.

† *Vide* Morton Prince, *The Dissociation of a Personality*, New York, 1905, cf. Hunter, *op. cit.* p. 84.

6. Hysteria.

Hysteria—Leads to Paralysis and Anæsthesia.]—Very similar to the disease of Multiple Personality is Hysteria, on which Janet and Freud have done much exploration work. Hysterical patients show a tendency toward the splitting up of their organisation of ideas, mainly under the force of suggestion, when they develop "the disposition to accept ideas uncritically." They may feel some twitching in their muscles; or begin to walk in sleep (somnambulism), performing all movements that normal consciousness would demand, yet by no means aware of them, being in a trance; or by transporting themselves after the trance to a far distant locality and performing movements connected therewith, without knowing as to how they came to be there. In many cases, these patients are found paralysed or at least insensitive to touch. This does not result from any bodily injury, but is solely due to suggestion.* You suggest to a patient that he cannot open his mouth. The idea at once becomes a reality, and he is paralysed, and cannot open his mouth at all. When the patient returns to his normal consciousness, he does not remember what happened during the trance, and follows his daily routine as if nothing had happened.

7. Hypnotism.

Hypnotism Described—"The Medium"—Mediumistic Trance.]—This is another phenomenon in which dissociated selves appear. By hypnotism we artificially produce "cases of multiple personality through suggestion." A person, usually known as the "operator," induces hypnotic sleep in another person, called the "medium," by some kind of suggestion. The writer has witnessed several such cases. The operator concentrates

* For an account of several interesting cases, read Janet, *The Major Symptoms of Hysteria*, New York, 1907.

his gaze on the medium without winking, and when sleep is coming, he waves his hands a few times over the medium's face. This puts the medium into deeper sleep, and makes him half unconscious, and the ordinary stimulations don't affect him. When other persons call out his name, there is no response; but when the operator calls him, he replies while asleep. Nobody can wake him up then. He is there more or less unconscious like a block of wood, but responds to the suggestions and questions put by the operator only. Whatever ideas are suggested by the operator are accepted as true by the medium. Some dead person is named, and the medium is asked to call him. He thus assumes a different personality, and the departed spirit answers through him. You can put a number of questions to him through the operator, and probably you will get accurate replies, which could not be explained otherwise than by assuming a real communication with the departed spirit in a way that transcends ordinary psychological explanation. There is room for fraud in most of these cases, but genuine cases are not altogether wanting. It is a clear case of dissociation of personality. During hypnosis or mediumistic trance, the person serving as medium is no longer his usual self. When he wakes up from his trance, he forgets all that he uttered or did during sleep; but if he is hypnotised again, the thread of connexion with the happenings during the previous trance is resumed.

Post-hypnotic Suggestion.]—There is one very interesting phenomenon, called post-hypnotic suggestion. A medium in trance is commanded by the operator to perform a certain action on awakening, *e.g.* to wind the clock lying on the mantelpiece at 6 p.m. to-morrow. The medium regains his usual personality, forgets all about the suggestion made during his sleep, but when it is 6 o'clock in the evening the following day, he moves like an automaton towards the mantelpiece, picks up the clock, and winds it. He executes the action just as he

was told. Much is being written on the subject, which is still buried in mystery.

Auto-suggestion or Self-hypnotism—A Typical Instance.] —It is also possible to hypnotise oneself without an operator. I have frequently given myself the suggestion to wake up at a certain hour, and have succeeded in doing so. Self-hypnotism, also called auto-suggestion, results from a suggestion given, consciously or unconsciously, to oneself. For instance, if I am accustomed to retire at 11 p.m., at that hour I usually feel the inclination to go to bed, but "drowsiness" results from the suggestion that I am fatigued. Without this suggestion, I can work an hour or two longer; but once the suggestion is made, my sense of drowsiness and languor will develop. A typical instance of auto-suggestion is as follows: * A lady had trouble with her eyes. She went to a local oculist in whom she did not have much confidence. The oculist examined her eyes and fitted glasses. But soon after, the lady complained of severe headache, and attributed it to abnormal strain caused by wrong glasses. She then went to a well-known eye specialist in a large town, and this gentleman, after examining her eyes and the glasses, assured her that the glasses were perfectly correct, with the result that the lady never suffered from headache, although wearing the same glasses afterwards.

8. Dreams.

Dreams—A Mystery—Freud's Work—How Dreams Arise.]—Another most interesting phenomenon illustrating a disturbance of personality is dreams. In the dream state, so long as it lasts, we lose consciousness of the external world, and assume a different personality occasionally. The dream-world strikes us as true and real as the objective world, until on waking up we realise that it was all a mere dream. Dreams, because of their

* *Vide* Hunter, *op. cit.* p. 93.

mysterious nature, have been associated with superstition as to their interpretation. But attempts have recently been made by Freud and others to go into the subject scientifically. Still there is no theory that can adequately explain dreams, their occurrence, and interpretation. It appears, however, that fundamentally they are due to the same mental laws as operate in our waking life. They generally arise on account of a pronounced sensory stimulation from without coupled with certain other kinds of excitations from within the organism. Indigestion is supposed to contribute to all kinds of dreams. An idea dominant during the day leaves a mental disposition in an excited condition, and this also contributes to dreams. In dreams, the thread of the waking state is lost, and so are time and space. You are now in Calcutta, the next moment in New York; you may dream of past happenings as if they are occurring to-day, but in an entirely new situation. All kinds of fantastic combinations of facts appear in dreams. We are also likely to forget our dreams very quickly. Sometimes they are indications of future happenings. The writer has, on several occasions, dreamt about certain coming events, mostly those he has been interested in, and they were found to be mainly correct anticipations. No satisfactory explanation is yet forthcoming as to this mystery.

Their Peculiar Features.]—During dreams, large areas of the cortex are inactive or asleep, and the remaining small portion has to do the whole work of association. Hence the associations are sometimes very far-fetched; experiences of very early years being put alongside those very recent, without any restraint from their actual context. The investigation of this problem is extremely interesting, and I remember having met a German scholar, a Professor at Königsberg, who was making a special study of the subject of dreams. Students desirous of going into the subject should read Freud.

9. Sleep.

Sleep and Fatigue—Symptoms.]—Another phenomenon, common in life, yet mysterious in nature, is sleep. It is now believed that sleep is an instinct. It is a form of nervous reaction, which nature brings about to restore the vitality of an organism. Work causes fatigue. Fatigue is nothing but the existence of waste products in muscle and blood, due to the constant wear and tear of the organism during its activity. To remove these waste products from the blood and muscle, to recuperate the tissues and nerve cells, and thus to destroy fatigue, nature brings about sleep. A mild fatigue brings on sleep easily, while if you are too tired, you won't have sleep. During sleep, the blood pressure is low, respiration becomes more pronounced, and the general organic vitality is reduced. But nervous action does not cease, otherwise there should be no reflex movements and dreams. It is very difficult to obtain sleep entirely free from dreams. A dreamless sleep is a real bliss which many cannot enjoy.

Sleep comes at a more or less regular interval, is deepest during the first hour, and cannot be had easily unless noises and other disturbances are eliminated. Darkness is also conducive to sleep. Some persons cannot sleep with lights on, while others are not affected by it. It is more or less a matter of habit.

Again, sleep is very quickly brought on by "monotonous stimulation." Some people make it a habit of reading newspapers immediately before sleeping, others spin round in their cars and are asleep. But an idea that keeps on haunting you or causing you excitement will not allow you to sleep. Then, again, under the stress of anxiety, sleep is difficult, but over-anxiety or a shock may reduce the nervous vitality so much as to induce sleep. Suggestion also plays an important part in inducing sleep. If you are haunted with the notion that you will not be able to sleep, probably you will remain restless; otherwise,

with the thought of a quiet and peaceful night, you are sure to have good sleep.

Duration of Sleep.]—There must necessarily be a limit to the duration of sleep. Young students should especially know what amount of sleep is recommended to them. Speaking generally, they must not sleep less than seven hours in any case, and not more than nine hours, and it should be indulged in at regular hours for the sake of one's health.

10. Insanity.

Insanity—Structural Derangement—Due to Heredity and Stress.]—Insanity is an abnormality in the real sense, as it denotes a diseased brain. Sleep and dream are phenomena which happen to every normal mind, and as they cannot be fitted into the normal states of our conscious life, we call them abnormal. But insanity is in no sense an abnormal state of a normal mind, but indicates a distinctly abnormal mentality or a "pathological state of the brain." Insanity is a derangement of structure, while sleep and dream are only functional derangements. Titchner says: "Dreaming and hypnosis stand to insanity as a sluggish liver stands to small-pox or a crushed foot; as occasional alcoholic intoxication, with its elevation of mind, thickness of speech, and unsteady gait, stands to the maudlin besottedness and incapacity of the habitual drunkard." * Insanity is very often an inherited mental disease, but ultimately it is stress upon the brain that causes it. Among the direct stresses leading to insanity, Dr. Mercier mentions "blows on the head, inflammation of the brain, the escape of blood into the rigid chamber of the skull, etc.," while indirect stresses include "puberty, pregnancy, ulcer of the stomach, tuberculosis of lung," as well as worries and anxieties.

Its Various Forms.]—Insanity assumes various forms,

* Titchner, *Primer of Psychology*, New York, 1919, p. 279.

due either to imperfect development of the brain, or degeneration of the cortex. Under the former head are placed the feeble-minded whose mental age is necessarily less than their bodily age, and the idiots. The idiot's brain is very imperfectly developed, and so he usually behaves like a child, and must not be left alone. On the other hand, when the brain development runs along wrong lines, it is really degeneration, and causes various types of insanity, such as mania, melancholia, general paresis. The maniac shows mental excitation and restlessness, and finally suffers from acute delirium. In melancholia he has mental depression and weeps and cries for hours sometimes without cause. In dementia, or loss of mentality, the patient is stupid and helpless, and the disease is usually fatal. Paresis is "a nervous and mental disease correlated with a certain type of cerebral syphilis." It is "one of the most insidious forms of insanity."

11. Psychoanalysis.

Method of Psychoanalysis—Free Association Method—Its Therapeutic Value.]—Our very brief account of the abnormalities of the mind would not be complete without a passing reference to psychoanalysis, a method so much talked of at present. The psychoanalytic method attempts to bring out the hidden forces of a personality. We know that what we learn once can never be completely forgotten, that we are affected by a multiplicity of forces from the outside without our being all the time aware of the fact, that no instinctive tendencies are ever completely wiped out, and that we are by no means immediately aware of a number of these factors. Much of it lies hidden as the background of our conscious life, without revealing itself any moment. Psychoanalysis, a method of free association, attempts to "restore to consciousness experiences that were forgotten perhaps in infancy or early childhood, and that have always been severely censured." Psychoanalysis proposes to analyse the whole of one's psychic

nature? It requires the individual to report faithfully each idea that comes to consciousness in succession, in an entirely passive manner, and to conceal nothing whatsoever. Thus the individual's past experience can be explored and brought to light. The method has actually succeeded in curing many people of morbid fear, worry, and anxiety. It is being studied very enthusiastically in America at the present day.

APPENDIX I

THE MIND-BODY RELATION

Theories of Mind and Body.

Theories of Mind-Body Relation.]—There are three principal theories on the relation between the mind and the body: the interaction theory, the theory of parallelism, and the automaton theory.

Interaction: Mutual Reaction of Mind and Body—Facts in Support.]—(1) The interaction theory is supported by common sense and says that the body acts upon the mind, and the mind acts upon the body. For instance, when I am tired, I cannot do any serious mental work. When boys are tired at the end of the school hours, their attention cannot be concentrated on any difficult problems of mathematics, which could be easily solved early in the morning. Sometimes we are attacked with fever or suffer from indigestion. In these cases we are very much pulled down and gloomy. This shows that the body acts upon the mind. Similarly, the mind acts upon the body; for instance, when we decide to go to the railway station to receive a friend, we get up and perform all actions necessary to carry out our decision. When we are angry, we strike somebody or clench our fists, if our enemy is beyond our reach.

Basis of the Theory.]—This theory is based on the consideration that man is not only influenced by his environments, but himself reacts upon his surroundings, and has the power to carry out his will. Between the mind and the body there is a mutual response and reaction. This theory is defended by Ward, James, Mellone, Ladd, A. E. Taylor, and others.

Theory Criticised—Supported by Common Sense—But Connexion not Explained—Violates Causality and Conservation of Energy.]—In criticism, it must be pointed out that interactionism seems to be the most natural view, and is therefore strongly supported by common sense. But it is not understood how a mere *idea* can cause any movement in the *brain*. The former is mental, the latter material. How is any connexion possible between such utterly heterogeneous phenomena? Interactionism therefore violates the principle of causality. Besides, we do not know exactly where the body ends and the mind begins. There is still another scientific objection urged against the theory. It is said that the hypothesis of a mutual influence between the mind and the body is not in conformity with the doctrine of the conservation of energy. If the mind acted on the body, it would mean the creation of energy; while the action of the body upon the mind would imply a destruction of energy. But according to the accepted law of conservation of energy, the amount of energy always remains the same, and energy can neither be created nor destroyed. Hence the theory of interaction cannot be accepted as a scientific explanation.

Parallelism—Mind and Body as Parallel Facts of Same Experience.]—(2) The theory of parallelism holds that the mind and the body are simply parallel facts, or aspects of the same world of experience. They do not affect one another. Mind can only cause mind, and body can only cause body. They run in two independent and parallel series.

Called "Double Aspect" Theory by Höffding.]—This theory finds its supporters among psychologists like Höffding (who names it the "Double Aspect" Theory), Paulsen, Münsterberg, and others. Stout seems to waver between this theory and the previous one.

Theory Criticised—Assumes a "Pre-Established Harmony"—And Fails to Explain *Anything—Based on "Mystery."*]—In criticism we have to observe that although this theory does no violence to causation, yet by itself it makes a big assumption. It assumes a kind of "pre-established harmony" between the two worlds of mind and body, but it is this very fact that we are called upon to explain. It therefore fails to explain anything, and dismisses the problem by the assump-

tion of a mysterious harmony between the physical and the psychical. Besides, the question may be asked, if the mind and the body are merely two aspects, what is that whose aspects they are? Is there a reality beyond them that manifests itself in the double series? Thus, the theory utterly fails to solve the problem.

Automaton Theory—Body Acts by Its Own Laws, Mind a Mere Spectator—Materialistic Basis.]—(3) The automaton theory says that the body acts like a machine by its own inherent laws, and that the mind is a mere spectator, or "epiphenomenon." It is held by materialists, who always explain mind in terms of matter. It agrees with the behaviouristic school, which holds that consciousness does not exist, and the act of behaviour is in itself ultimate. The mind is a mere name for the action of the body. Karl Vogt developed his materialism in the following words, which have become a classical quotation: "As contraction is the function of the muscles, and as the kidneys secrete urine, so, and in the same way, does the brain generate thoughts, movements, and feelings."

Offers no Explanation.]—This theory is entirely one-sided and offers no explanation. It also rests on a mere assumption of the self-activity of the body. Moreover, it is inconceivable that the fact of consciousness should have no use, function, or purpose. If consciousness exists, as we all believe, it must have some function and activity. Thus, this hypothesis also dismisses the problem instead of solving it.

APPENDIX II

THE JAMES-LANGE THEORY OF EMOTION

The "James-Lange Theory" of Emotion.

Relation of Emotion and Instinct—According to Older Psychology—According to James and Lange.]—The intimate relation between emotion and instinct has been emphasised so much as to be the basis of a new theory. According to the older psychology, supported by common sense, an object (*e.g.* a bear) causes an emotion (fear), which, again, causes an emotional reaction (running), which is the "expression" of that emotion. James and Lange maintain that the object (bear) causes the emotional reaction (running), which, again, causes the emotion (fear); *e.g.* we are afraid because we run. Thus we can arrange the steps:

	1	→ 2	→ 3
Old Theory:	Object (Bear)	Emotion (Fear)	Bodily movement (Running)
James-Lange Theory	Object (Bear)	Bodily movement (Running)	Emotion (Fear)

According to the old theory, when a man is about to strike me, I am frightened and run; that is to say, the emotion of fear is followed by its expression, the instinct to run. But according to James and Lange, I see the man ready to strike me, run, and then I am frightened. In other words, what is usually regarded as the "expression" of an emotion is viewed by James and Lange as the source of emotion. This theory was propounded by William James in 1884, and the following year Carl Lange also arrived at the same conclusion independently. To quote James:

James Quoted.]—Our natural way of thinking about the emotion is that the mental perception of some fact excites the mental affection called the emotion, and that this latter state of mind gives rise to the bodily expression. My thesis, on the contrary, is that the bodily change follows directly the perception of the exciting fact, and that our feeling of the same changes as they occur is the emotion. Common sense says, we lose our fortune, are sorry and weep; we meet a bear, are frightened and run; we are insulted by a rival, are angry and strike. The hypothesis here to be defended says that this order of sequence is incorrect, that the one mental state is not immediately induced by the other, that the bodily manifestations must first be interposed between, and that the more rational statement is that we feel sorry because we cry, angry because we strike, afraid because we tremble, and not that we cry, strike, or tremble because we are sorry, angry, or fearful, as the case may be. (*Principles of Psychology*, vol. ii. p. 450.)

No Disembodied Emotion, according to James.]—Thus, according to this theory, emotion is merely a consciousness of bodily movement; in other words, there is no disembodied emotion. As James says, if we fancy a strong emotion, like anger or fear, and mentally think away from it all the bodily disturbances, nothing is left behind. "A disembodied human emotion is a sheer non-entity."

Criticism of the Theory.

James' Theory Criticised—Two Interpretations—Facts in Support of James.]—The "slap-dash" statement of James, first made in 1884, sounds paradoxical. It can mean either (1) that emotion is only the consciousness of bodily movement, or (2) that the consciousness of bodily movement is the essential characteristic of emotion. The theory has been usually interpreted in the first sense, and on that basis subjected to severe criticism. But in the modified form of the second statement, which seems to be his revised version, published in 1894, the theory is not so objectionable as it appears at first sight. It is true that if we abstract all bodily movements from a strong emotion, it becomes cold and lifeless. Ordinarily, our experience will support this general fact, although we are not prepared to accept the sequence of "object"—"expression"—"emotion," as proposed by James.

It must also be remembered that bodily reaction need not necessarily be external; the emotion may manifest itself internally. Thus, according to James, the emotion of fear would be a blend of sensations set up by the internal bodily changes, produced directly by the perception of danger. "There can be no doubt, I believe," says Woodworth, "that sensations caused by the bodily changes form part, at least, of the conscious emotion." *

Support from Cannon's Recent Experiments—But only in Part.]—That bodily changes accompanying emotion are not merely incidental but essential seems further demonstrated by the experiments carried on recently by Cannon by the use of X-rays. It has been discovered that in fear or anger, the churning process of the stomach, as well as the flow of gastric juice, stops. These experiments would lend further support to James' theory, and make it appear probable "that an emotion is the way the body feels when it is prepared for a certain reaction." The only thing that is unfavourable, in Cannon's researches, to the theory of James, is the fact that although fear and anger are different emotions, and one would naturally expect different bodily changes in each, yet experiments on the secretion of adrenal glands show that the expression of these two emotions is curiously the same. Hence, the inference is that "the emotion cannot be wholly a reflection of the bodily state."

Novelty of James' Theory—James Anticipated.]—The James-Lange theory is not absolutely new. Lange's vaso-motor hypothesis was anticipated by Malebranche, and as Titchner has pointed out,† the emphasis on the organic constituents of emotion is nothing new and original, and the fact was already pointed out by Aristotle, Descartes, Spinoza, Lotze, Schneider, and at present by McDougall. The originality of the theory lies more in its paradoxical slap-dash statement and timeliness rather than in its contents.

Defects of the Theory.]—We may now set down in brief the criticism that could be urged against the theory:

(1) It is said that without bodily symptoms, there is no emotion. Hence, bodily reaction is an essential constituent

* Woodworth, *Dynamic Psychology*, New York, 1922, p. 52.

† *Op. cit.* p. 470.

of emotion. But this position is not logically sound. This would be like saying that because we cannot imagine a sensation to exist without intensity, therefore the sensation is the intensity!

(2) If emotion is the consciousness of bodily movement, how is it that the same emotion has different expressions in different persons or in the same person at different times?

(3) How is it that different emotions, like fear and anger, should cause the same bodily changes (in Cannon's experiments)?

(4) How is it that different emotions produce the same effect? For instance, we shed tears in acute grief as well as in exceptionally great joy. We grow pale not only in fear but also in anger. We tremble both in fear and anger.

(5) Sherrington experimented on dogs. He transected their spinal cords just below the medulla, thereby cutting off the sensory impulses. He found that even then emotional expression was there. So he concluded that organic processes could not be the essential constituents of emotion.

Ward's Criticism of the Theory.]—Ward criticises this theory at some length in his *Psychological Principles*, and sums up by remarking that the James-Lange theory is psychologically and biologically absurd, a flagrant *hysteron proteron:* that its appeal to pathology is futile in fact and false in method. "Emotion is *always* the expression of feeling—for the subject that feels has *always* some objective ground. Emotion is *never* the reception of impressions, but is always the response to them." Thus this theory is thrown aside as an instance of "physiology misapplied."

APPENDIX III

THEORIES OF INSTINCT

Theories of Instinct.

Theories of Instinct—Theory of Lapsed Intelligence—Reflex Theory—Theory of Organic Selection.]—Instincts are tendencies transmitted to the individual by inheritance. But there is a controversy over the question as to whether such tendencies can be inherited at all, as Weismann seems to have demonstrated that bodily changes are not inherited by the offspring. This is purely a biological question.

There are three principal theories on the origin of instinct: *

(1) *Theory of Lapsed Intelligence*, defended by the American biologist Cope and the German psychologist Wundt. It says that originally instincts were intelligent and voluntary acts, and that by repetition they became habitual, and were transmitted to the next generation as instincts or organically fixed habits. This view, however, is not supported by general biological opinion, and requires us to believe in a great amount of intelligence in lower animals, which is contrary to the results of animal psychology.

(2) *Reflex Theory*, defended by Spencer, Weismann and others, holds that "the reflexes which make up a given instinct appear one by one, due to chance variations (sports), until the whole instinct is present." This theory views instincts as merely "accumulated reflex adjustments," which are determined by natural selection, so that those adjustments only which tend to preserve the organism remain, the others are weeded out. In criticism it is urged that the various "reflexes are only valuable as parts of the whole, and by themselves cannot adjust the organism to its environment in

* Hunter, *op. cit.* p. 190. See also Angell, *op. cit.* p. 343.

such a way as to aid in its survival." Why should a bird pick up straws and fly and deposit the straws together unless the whole instinct of nest-building is present ?

(3) *Theory of Organic Selection*, supported by Baldwin, Osborne and Morgan, is a modification of the above two views. It says that " during the period of imperfect and growing instinct the animal solves its problems partly by intelligence, and accordingly survives. These intelligent variations are not inherited, but must be made anew by each generation." " An instinct may thus indirectly involve conscious activities in its establishment, although it does not arise from the direct crystallisation into habits of previously conscious acts." But the question may be asked, how is it that an instinct appears in one group of species and not in others ?

INDEX

Action and thought, 20; ideo-motor, 121; and habit, 122
Apperception, 54
Association, laws of, 70; basis of, 73
Attention and consciousness, 45; conditions of, 45; kinds of, 47; span of, 48; duration of, 49; sustained, 49; scattered, 50; and volition, 129
Auto-suggestion, 140.

Behaviour and consciousness, 5; and movement, 27; types of, 28

Choice, 128; and deliberation, 128
Comparison, 106
Conception, 107; and language, 109, 111; system of, 109; formation of, 110
Consciousness, meaning of, 5; and behaviour, 5; and mind, 6; and brain, 15; modes of, 19; characteristics of, 21; and attention, 45; unity of, 21, 132

Deliberation, 127; and choice, 128
Discrimination, 104
Dreams, 140; how they arise, 141; Freud's work on, 141; peculiar features of, 141

Emotion, nature of, 88; characteristics of, 89; and instinct, 88, 91; classification of, 92, 94; of fear and anger analysed, 92, 93; and passion, 94; and mood, 95; and temperament, 96; and sentiment, 97; function of, 99; theories of, 149 ff.

Fechner's Law, 37; limitations of, 38
Feeling, nature of, 39; and sensation, 39; and affection, 40; attributes of, 41; rôle in mental life, 43
Forgetfulness, 76

Habit and instinct, 84; relation to thought and action, 122; formation of, 124; psychology of, 124; characteristics of, 125; and character, 130
Hallucination, 62
Hypnotism, 138; self-, 140
Hysteria, 138

Ideo-motor Action, 121
Illusion, 60, 61
Imagination and memory, 78 ff.; constructive, 79
Inattention, 50
Insanity, 143; its forms, 144
Instinct, nature of, 82; and reflex action, 83; and habit, 84; and intelligence, 84; human, 85; classification of, 86; blindness of, 86; and emotion, 88, 91; theories of, 153 ff.

Judgment, 112; analytic and synthetic, 113

Language and thought, 100 ff.; a social product, 100; as instrument of conceptual analysis and synthesis, 111; development of, 115

Memory, definition of, 64; analysis of, 65; stages of, 66; kinds of, 73; types of, 74; good and bad, 75; and imagination, 78
Mind, nature of, 8; relation to consciousness, 6; and soul, 7; and body, 15; theories of relation to body, 146 ff.; unity of, 20; types of, 20
Mood and passion, 94; relation to emotion, 94 ff.
Movement, kinds of, 118; development of, 120

Nervous system, 16 ff.

Perception, definition of, 52; complexity of, 52; and sensation, 53; analysis of, 54; forms of, 56; of space and time, 56 ff.
Personality, types of, 135; multiple, 136
Psychoanalysis, method of, 144; its therapeutic value, 144
Psychology, definition of, 1; standpoint of, 2; data of, 3; problem of, 9; methods of, 10; fields of, 12

Reasoning, 113 ff.
Reflex action and instinct, 83

Self, 132; pure and empirical, 132; idea of, 133; development of, 134; disturbances of, 136
Sensation, nature of, 30; and meaning, 31; pure, 31; attributes of, 32; classification of, 33; kinæsthetic, 36; and perception, 53
Sentiment, 97; and emotion, 97; types of, 98
Sleep, 142; and fatigue, 142; duration of, 143
Subconsciousness, 25

Temperament, 96; and mood, 96; classification of, 96
Thought, and action, 20; and language, 100 ff.; meaning of, 101; and habit, 122

Unconscious processes, 25

Volition, analysis of, 117; and attention, 129

Weber's Law, 36 ff.; limitations of, 38

THE END

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